

# EDUCATIONAL PSYCHOLOGY

## DEVELOPING LEARNERS

**JEANNE ELLIS ORMROD**

University of Northern Colorado (Emerita)

**ERIC M. ANDERMAN**

The Ohio State University

**LYNLEY ANDERMAN**

The Ohio State University



**NINTH EDITION**

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# *Dedication*



To Olivia, Miles, and Jack  
*Jeanne*

To our parents Gloria and Arthur, Myra and Noel,  
and our children Jacob and Sarah  
*Eric and Lynley*



## About the Authors



**JEANNE ELLIS ORMROD** received her A.B. in psychology from Brown University and her M.S. and Ph.D. in educational psychology from The Pennsylvania State University. She earned licensure in school psychology through postdoctoral work at Temple University and the University of Colorado at Boulder and has worked as a middle school geography teacher and school psychologist. She was Professor of Educational Psychology at the University of Northern Colorado until 1998, when she moved east to return to her native New England. She has published and presented extensively on cognition and memory, cognitive development, instruction, and related topics but is probably best known for this book and four others: *Human Learning* (currently in its seventh edition); *Essentials of Educational Psychology* (currently in its fourth edition); *Child Development and Education* (co-authored with Teresa McDevitt, currently in its sixth edition); and *Practical Research* (co-authored with Paul Leedy, currently in its eleventh edition). She has also published a non-textbook for a broad audience: *Our Minds, Our Memories: Enhancing Thinking and Learning at All Ages*. She and her husband Richard live in New Hampshire, where (she is happy to report) she is within a 90-minute drive of her three young grandchildren.

**ERIC M. ANDERMAN** received his B.S. in Psychology and Spanish from Tufts University, his Ed.M. from Harvard University, and his Ph.D. in Educational Psychology from The University of Michigan. He earned licensure as a social studies and foreign language teacher, and taught at the middle school and high school levels before attending graduate school. He is currently Professor of Educational Psychology and Chair of the Department of Educational Studies at The Ohio State University. He has published extensively on academic motivation, with emphases on (a) school transitions, (b) school effects on motivation, (c) motivation and risky behavior during adolescence, and (d) academic cheating. He is the editor of *Theory Into Practice*, and former associate editor of the *Journal of Educational Psychology*. He has co-edited several books, including the third edition of the *Handbook of Educational Psychology* (with Lyn Corno); the *International Guide to Student Achievement* (with John Hattie); *Psychology of Academic Cheating* (with Tamera Murdock); and *Psychology of Classroom Learning* (with Lynley Anderman). He also co-authored the book *Classroom Motivation* (currently in its second edition) with Lynley Anderman.





**LYNLEY H. ANDERMAN** received her B.A. and M.A. (Hons.) in Education from the University of Auckland, New Zealand, and her Ph.D. in Educational Psychology from The University of Michigan. A graduate of North Shore Teachers College (Auckland, New Zealand) she taught for several years in primary and intermediate schools in Auckland. Currently, she is Professor of Educational Psychology at The Ohio State University. She has published and presented extensively on academic motivation, particularly in relation to the roles of instructional and social-relational characteristics of classrooms that support students' motivation and engagement, and on the role of Educational Psychology in Teacher Education. She is the former editor of the *Journal of Experimental Education* and former associate editor of *Theory into Practice*. She has co-edited *Psychology of Classroom Learning* and co-authored the book *Classroom Motivation* with Eric Anderman.



# Preface

## New to this Edition

In this ninth edition of *Educational Psychology: Developing Learners*, I'm pleased to welcome my fellow educational psychologists Eric and Lynley Anderman as coauthors. More specifically, Eric and Lynley have overhauled Chapter 11 and also brought their perspectives to Chapters 4, 5, 10, and 13.

Many features that have made previous editions of the book so popular with instructors and students remain in this edition, including a conversational writing style, Experiencing Firsthand features, organizational tables and diagrams, and an ongoing emphasis on classroom applications. Yet there are also significant changes. As always, all 15 chapters have been updated to reflect recent advances in research, theory, and classroom practices.

More specific additions and changes to this edition include the following:

- **Chapter 1:** New heading to give greater visibility to mixed-methods research; new discussion of *principles* (in addition to *theories*) in the section “From Research to Practice.”
- **Chapter 2:** Expanded discussion of Bronfenbrenner’s bioecological systems theory, with a new Figure 2.1 depicting the various layers of environmental influence proposed by Bronfenbrenner; updated discussion of physical development (in a Content Extension feature); Video Explanation showing various basic brain structures and their key roles; two Video Explanations illustrating certain concepts in Vygotsky’s theory (e.g., *cognitive tools*, *zone of proximal development*).
- **Chapter 3:** Addition of a fourth important role of peers in children’s development (i.e., to teach new skills, such as computer programming or skateboarding techniques); replacement of the term *peer pressure* with the broader term *peer contagion*, in line with current thinking about the nature of peer influences; expanded discussion of popularity and social isolation; broadened discussion of diversity in moral development to include six different dimensions that moral reasoning and behavior might encompass.
- **Chapter 4:** Expanded discussion of distinctions between ethnic and racial groups; expanded discussions of students who speak languages other than English at home and of cultural differences in conceptions of time; discussion of increasing expectations for students to use technology at home and the challenges that such expectations impose on children in low-income families; expanded discussion of possible strategies for assisting homeless students.
- **Chapter 5:** New Experiencing Firsthand exercise related to fluid versus crystallized intelligence; updated critical examination of different theoretical conceptions of intelligence and measurement of intelligence; discussion of noncognitive contributors to intelligence; expanded discussions of how certain widely advocated strategies have little or no research support and thus are questionable practices at best (see the sections “Do Students Have Distinct Learning Styles?” and “Does It Make Sense to Teach to Students’ ‘Right Brains’ or ‘Left Brains’?”); expanded discussion of advantages versus drawbacks of inclusion as a general approach to working with students who have special educational needs.
- **Chapter 6:** Two Video Explanations regarding the nature of human memory; addition of *executive function* as a key term (because this term has increasingly been appearing in practitioner-oriented literature); new discussion of the brain’s need for some mental downtime during the school day; discussion of *reconsolidation* as a possible reason for forgetting or, more accurately, misremembering.
- **Chapter 7:** New discussion of self-reflection as a strategy for enhancing metacognitive awareness; new section “Metacognitive Strategies in the Digital Age”; expanded discussion of epistemic beliefs; expanded discussion of critical thinking.

- **Chapter 8:** Revision of the discussion of *situated learning* and *situation cognition* to encompass two somewhat different meanings that various theorists have ascribed to these terms; greater visibility given to Vygotsky's and Bronfenbrenner's theories as foundations for the contextual perspectives described in the chapter (with a new Video Explanation regarding Vygotsky's theory); new example of culturally relevant practice in teaching math; greater attention to how literacy and various content domains are interdependent, especially as reflected in a new Application Exercise.
- **Chapter 9:** Five Video Explanations that explain and illustrate certain behaviorist ideas and applications (e.g., negative reinforcement versus punishment, use of functional analysis to address chronic behavior problems); content of the previous edition's section "Strengths and Potential Limitations of Behaviorist Approaches" now integrated into the section "Strategies for Encouraging Productive Behaviors"; revision of section on classical conditioning to encompass the idea that the association between the unconditioned stimulus (UCS) and unconditioned response (UCR) might have been acquired at an earlier time (a footnote introduces the concept of *higher-order conditioning* for readers who might want to pursue this idea further); revision of discussion of *time-out* to be more in line with current practices; new bullet on using technology to reinforce desirable behaviors and achievements.
- **Chapter 10:** Expanded discussion of teacher efficacy; addition of *proximal goal* as a key term in this chapter, with discussion of the benefits of setting proximal goals, within the contexts of self-efficacy and self-regulation; new table comparing various self-related concepts.
- **Chapter 11:** Reorganization of sections, with distinctions among different perspectives on the roles of "needs" in motivation; discussion of self-determination theory as both a cognitively and needs-based theory of motivation; addition of the distinction between *mastery-approach goals* and *mastery-avoidance goals*; new section on *mindsets*; new concluding section on motivating students in any environment.
- **Chapter 12:** Revision of opening case study to incorporate uses of digital technology and the Internet; more extensive coverage of Common Core, with an effort to address some common misconceptions (and help alleviate widespread concerns) about these standards; addition of Next Generation Science Standards to the discussion of standards; new Figure 12.3 to illustrate how content-area standards can be integrated into a backward-design approach to instructional planning; new Application Exercises in which readers apply what they have learned about Common Core and backward design; new discussion of *My Science Tutor* (including two screenshots) as an example of an instructional website in which students interact with a virtual tutor via spoken language; expanded discussion of discovery and inquiry activities.
- **Chapter 13:** Expanded discussion of planning activities that keep students on task as a means of preventing misbehavior; updated use of terminology in discussions of schoolwide positive behavioral supports and interventions; inclusion of additional strategies for communicating with parents; expanded discussion of dealing with misbehaviors; modification of the previous edition's discussion of gang-related problems.
- **Chapter 14:** Two new Video Explanations regarding formative versus summative assessments and rubric design; new rubric in the text that better illustrates good rubric design (Figure 14.5); discussion of backward design as an essential tool in planning assessments (with Figure 12.3 being repeated as Figure 14.6); integration of discussions of digital technologies (which were previously in a separate section near the end of the chapter) into discussions of formative assessment and formal paper–pencil assessments; new discussion of how students might cheat via digital technologies.
- **Chapter 15:** Expansion of section on criterion-referenced scores, with a new discussion of problems associated with combining multiple criterion-referenced scores (e.g., obtained with a rubric) into a single overall score; expanded discussion of the pros and cons of value-added assessment as a means of evaluating teacher effectiveness.

## General Rationale for the Book

As teachers, we play critical roles in the lives of children and adolescents. Some of us help them learn to read and write. Some of us help them understand their physical and social worlds through explorations of science, mathematics, geography, history, or literature. Some of us help



them express themselves through physical movement, the visual arts, or music. And some of us teach them specific skills they will need as adult professionals in, say, auto mechanics, cooking, or computer technology. But regardless of the subject matter we teach, we help those in the generations that follow us to become knowledgeable, self-confident, and productive citizens.

In my mind, teaching is the most rewarding profession we could possibly choose. Yet it's often a challenging profession as well. Students don't always come to us ready or eager to learn classroom subject matter. How can we help them develop the knowledge and skills they need to become productive adults? What strategies can we use to motivate them? What tasks and instructional materials are appropriate for students at different developmental levels? Over the years, researchers and practitioners have worked together to answer such questions. Collectively, we're in the fortunate position of being able to benefit from the many insights that such experts offer.

I've been teaching educational psychology since 1974, and I've loved every minute of it. How children and adolescents learn and think, how they change as they grow and develop, why they do the things they do, how they're often very different from one another—our understandings of all of these things have innumerable implications for classroom practice and, ultimately, for the lives of young people.

In this and the previous eight editions, I've written this textbook in much the same way that I've taught my college classes. Because I want the field of educational psychology to captivate you the way it has captivated me, I've tried to make the book interesting, meaningful, and thought-provoking as well as informative. I have a definite philosophy about how future teachers can best learn and apply educational psychology, and this philosophy has guided me as I've written every edition. In particular, I believe that human learners of all ages actively *construct* their own understandings of what they read in textbooks—an idea reflected in the puzzle-piece motif you'll see throughout the book.

## Helping Our Readers Learn and Apply Educational Psychology

You can gain much more from your study of educational psychology when you:

- Focus on core concepts and principles of the discipline
- See these principles in action in your own learning and behavior
- Use the principles to understand the learning and behavior of children and adolescents
- Consistently apply the principles to classroom practice

You'll find numerous features throughout the book to help you do all of these things. We authors hope you'll learn a great deal from what educational psychology has to offer, not only about the students you may be teaching but also about yourself.

### FOCUSING ON CORE CONCEPTS AND PRINCIPLES

Rather than superficially explore every aspect of educational psychology, this book zeroes in on fundamental concepts and principles that have broad applicability to classroom practice. Throughout the book, core concepts appear in boldfaced blue font. Core principles are clearly identified in sections labeled “Basic Principles” or “Basic Assumptions” and then often summarized in *Principles/Assumptions* tables. Each table includes educational implications and concrete examples. See the following pages for some examples: 42, 195, and 270.

### SEEING CONCEPTS AND PRINCIPLES IN ACTION IN YOUR OWN LEARNING

A central goal of this book has always been to help our readers discover more about themselves as thinkers and learners. Thus we include *Experiencing Firsthand* exercises throughout the book—exercises that illustrate such diverse concepts as constructive processes, working memory, sense of self, social cognition, ethnic stereotyping, and confidentiality in assessment. All of these exercises are designed to do exactly what their name implies: help our readers observe principles of educational psychology *in themselves*. See the following pages for some examples: 132, 194, and 199.

## UNDERSTANDING CHILDREN'S AND ADOLESCENTS' LEARNING AND BEHAVIOR

Throughout the book we continually urge our readers to look closely at and try to make sense of what children and adolescents do and say. Each chapter begins with a *Case Study* that situates chapter content in a real-life scenario; for instance, see page 191. We also make frequent use of *real artifacts* from children's journals and school assignments to illustrate concepts and principles in action. For examples, see pages 54, 203, and 356.

## EXAMINING DEVELOPMENTAL TRENDS

Unique to this book is a focus on children's and adolescents' development in every chapter. For example, Chapters 2 through 4 and 6 through 15 all have one or more *Developmental Trends* tables that summarize age-typical characteristics at four grade levels (K–2, 3–5, 6–8, and 9–12), present concrete examples, and offer suggested classroom strategies for each level. You can find three of these tables on pages 210, 289, and 491.

## APPLYING CORE IDEAS OF EDUCATIONAL PSYCHOLOGY TO CLASSROOM PRACTICE

Throughout this text, psychological concepts and principles are consistently applied to classroom practice. We also provide *Into the Classroom* and *Creating a Productive Classroom Environment* boxes that suggest and illustrate strategies related to particular areas of concern for teachers. You can find three such features on pages 131, 242, and 416.

This book is consistently praised for its emphasis on application. Throughout the book we identify suggested strategies—within the text, in tables, and in the margins—with apple icons; for instance, see pages 47 and 50.

## HELPING YOU PREPARE FOR LICENSURE

All chapters end with *Practice for Your Licensure Exam* exercises. These exercises provide readers with opportunities to use the content they've learned in a particular chapter to answer multiple-choice and constructed-response questions similar to those that appear on many teacher licensure tests. Three of these exercises are on pages 113, 188, and 341.

## Ancillary Materials

The following resources are available for instructors to download on [www.pearsonglobaleditions.com/ormrod](http://www.pearsonglobaleditions.com/ormrod).

### INSTRUCTOR'S RESOURCE MANUAL

An Instructor's Resource Manual includes suggestions for learning activities, additional Experiencing Firsthand exercises, supplementary lectures, case study analyses, discussion topics, group activities, and additional media resources.

### POWERPOINT® SLIDES

The PowerPoint slides include key concept summarizations, diagrams, and other graphic aids to enhance learning. They are designed to help students understand, organize, and remember core concepts and theories.

### TEST BANK

I (Jeanne Ormrod) have personally written many of the test questions in the Test Bank that accompanies the book; Test Bank coauthors have added new ones to reflect the updates to the eighth and ninth editions. Some items (lower-level questions) simply ask students to identify or explain concepts and principles they have learned. But many others (higher-level questions) ask students to apply those same concepts and principles to specific classroom situations—that is, to actual

student behaviors and teaching strategies. Ultimately it is these higher-level questions that assess students' ability to use principles of educational psychology in their own teaching practice.

## TESTGEN

TestGen is a powerful test generator that you install on your computer and use in conjunction with the TestGen test bank file for your text. Assessments, including equations, graphs, and scientific notation, may be created for both print and online testing.

TestGen is available exclusively from Pearson Education publishers. You install TestGen on your personal computer (Windows or Macintosh) and create your own tests for classroom testing and for other specialized delivery options, such as over a local area network or on the web. A test bank, which is also called a Test Item File (TIF), typically contains a large set of test items, organized by chapter and ready for your use in creating a test, based on the associated textbook material.

The tests can be downloaded in the following formats:

TestGen Test bank file—MAC

TestGen Test bank file—PC

Angel TestGen Conversion

Test Bank for Blackboard Learning System

Desire to Learn TestGen Conversion

Moodle TestGen Conversion

Sakai TestGen Conversion

Test Bank for Blackboard CE/Vista

## Acknowledgments

I've been fortunate to have had a great deal of help in writing the many editions of this book. First and foremost, the book wouldn't be what it is today without long-term partnerships with my editor and publisher, Kevin Davis. Kevin first came on board as developmental editor for the book in 1989 and, except for a 2-year hiatus while he served in other roles at Pearson, has continued to guide the book through its multiple iterations, first only in paper and now in the ever-changing digital world. Although Kevin hasn't penned the words, his influence permeates every page of text and every activity. His ideas, suggestions, and occasional gentle demands have consistently pushed and stretched me to new heights in my efforts to create the best possible pedagogical experience for readers.

My coauthors and I are also deeply indebted to developmental editor Gail Gottfried, who has kept all three of us on course, reminding us of our long-term targets and nudging us ever closer to those targets. Whereas authors can sometimes get lost in the nitpicky details of a monumental writing task such as this one, Gail has an amazing ability to direct our attention simultaneously to both the specific trees and the overall forest of which each one is a part. Especially with two new authors coming on board, Gail has gone way, way, *way* beyond the call of duty this time around. I hope that she is finally finding the time to sit back and relax with a big glass of wine as she celebrates the book's final arrival on the scene.

Three other critical players have been project managers Lauren Carlson, Pam Bennett, and Norine Strang, who have expertly organized and overseen the countless steps involved in transforming our word-processed manuscripts and rough sketches into the finished product you see before you. In this high-tech day and age, publishing a book is a very complicated process that I'm grateful they know how to complete. Many thanks, too, to Raye Lakey, who has created all of the Self-Check Quizzes and some of the new Application Exercises in MyEducationLab. In fact, she took charge of the overall media plan for Chapters 4, 5, 10, 11, and 13 and created all of the Application Exercises for those chapters.

In addition, numerous colleagues across the nation have strengthened the book itself by reviewing one or more of its previous versions. Reviewers for the first eight editions were Jane Abraham, Virginia Tech University; Joyce Alexander, Indiana University; Eric M. Anderman, then at University of Kentucky; Linda M. Anderson, Michigan State University; Margaret D. Anderson, SUNY-Cortland; Cindy Ballantyne, Northern Arizona University; J. C. Barton,

Tennessee Technical University; Timothy A. Bender, Southwest Missouri State University; Angela Bloomquist, California University of Pennsylvania; Phyllis Blumenfeld, University of Michigan; Gregory Braswell, Illinois State University; Kathy Brown, University of Central Oklahoma; Randy L. Brown, University of Central Oklahoma; Stephen L. Benton, Kansas State University; Karen L. Block, University of Pittsburgh; Kathryn J. Biacindo, California State University–Fresno; Barbara Bishop, Eastern New Mexico University; Robert Braswell, Winthrop College; Kay S. Bull, Oklahoma State University; Margaret W. Cohen, University of Missouri–St. Louis; Theodore Coladarci, University of Maine; Sharon Cordell, Roane State Community College; Roberta Corrigan, University of Wisconsin–Milwaukee; Richard D. Craig, Towson State University; José Cruz, Jr., The Ohio State University; David Yun Dai, SUNY–University at Albany; Peggy Dettmer, Kansas State University; Joan Dixon, Gonzaga University; Leland K. Doebler, University of Montevallo; Kellah Edens, University of South Carolina; Catherine Emilhovich, SUNY–Buffalo; Joanne B. Engel, Oregon State University; Kathy Farber, Bowling Green State University; William R. Fisk, Clemson University; Victoria Fleming, Miami University of Ohio; M. Arthur Garmon, Western Michigan University; Roberta J. Garza, Pan American University–Brownsville; Mary Gauvain, University of California–Riverside; Sister Nancy Gilchrist, St. Joseph’s College; Nathan Gonyea, SUNY–Oneonta; Cheryl Greenberg, University of North Carolina–Greensboro; Richard Hamilton, University of Houston; Jennifer Mistretta Hampston, Youngstown State University; Ken Hay, Indiana University; Arthur Hernandez, University of Texas–San Antonio; Lynley Hicks, University of Missouri–Kansas City; Heather Higgins, University of North Carolina–Greensboro; Frederick C. Howe, Buffalo State College; Peggy Hsieh, University of Texas–San Antonio; Dinah Jackson, University of Northern Colorado; Janina M. Jolley, Clarion University of Pennsylvania; Caroline Kaczala, Cleveland State University; CarolAnne M. Kardash, University of Missouri–Columbia; Pamela Kidder-Ashley, Appalachian State University; Kenneth Kiewra, University of Nebraska–Lincoln; Nancy F. Knapp, University of Georgia; Mary Lou Koran, University of Florida; Randy Lennon, University of Northern Colorado; Howard Lloyd, University of Kentucky; Susan C. Losh, Florida State University; Pamela Manners, Troy State University; Hermine H. Marshall, San Francisco State University; Teresa McDevitt, University of Northern Colorado; Sharon McNeely, Northeastern Illinois University; Michael Meloth, University of Colorado–Boulder; Kelly S. Mix, Michigan State University; Bruce P. Mortenson, Louisiana State University; Janet Moursund, University of Oregon; P. Karen Murphy, The Pennsylvania State University; Gary A. Negin, California State University; Joe Olmi, The University of Southern Mississippi; Helena Osana, Concordia University; James Persinger, Emporia State University; Judy Pierce, Western Kentucky University; James R. Pullen, Central Missouri State University; Gary F. Render, University of Wyoming; Robert S. Ristow, Western Illinois University; Jeff Sandoz, University of Louisiana–Lafayette; Rolando Santos, California State University–Los Angeles; Gregg Schraw, University of Nebraska–Lincoln; Dale H. Schunk, University of North Carolina–Greensboro; Mark Seng, University of Texas; Glenn E. Snelbecker, Temple University; Johnna Shapiro, University of California–Davis; Kenneth Springer, Southern Methodist University; Harry L. Steger, Boise State University; Bruce Torff, Hofstra University; Ann Turnbull, University of Kansas; Julianne C. Turner, University of Notre Dame; Tina Van Prooyen, Heartland Community College; Enequina Vazquez, New Mexico State University; Courtney Vorell, Minnesota School of Business; Alice A. Walker, SUNY–Cortland; Mary Wellman, Rhode Island College; Jane A. Wolffe, Bowling Green State University; Ya-Shu Yang, University of Nebraska–Lincoln; and Karen Zabrocky, Georgia State University.

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J. E. O.

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# 1

## Teaching and Educational Psychology

### Learning Outcomes



- 1.1** Explain the importance of research in classroom decision making.
- 1.2** Draw appropriate conclusions from different types of research studies.
- 1.3** Describe several strategies for collecting information about your own students.
- 1.4** Plan long-term strategies for gaining expertise as a teacher.
- 1.5** Use effective strategies when you read and study.

## CASE STUDY: THE “NO D” POLICY

Anne Smith is a ninth-grade English teacher with 10 years of teaching experience, and by all accounts she is an excellent teacher. Even so, in previous years many of her students haven't invested much time or energy in their writing assignments and seemingly haven't been bothered by the Cs and Ds they've eventually earned in her classes. In an effort to more fully engage this year's students in their schoolwork, Ms. Smith begins fall semester by initiating two new policies. First, to pass her course, students must earn at least a C; she won't give anyone a final grade of D. Second, students will have multiple opportunities to revise and resubmit assignments; she'll give whatever feedback students need—and, if necessary, one-on-one instruction—to help them improve their work. She solicits students' questions and concerns about the new policies, gains their agreement to “try something new,” and engages them in a discussion of specific, concrete characteristics of A-quality, B-quality, and C-quality work. Then, as the semester progresses, she regularly administers brief surveys to get students' feedback about her innovations, asking such questions as “How is the ‘no D’ working for you?” “Do you think your grade is an accurate reflection of your learning?” and “Any suggestions?”

Students' responses on the surveys are overwhelmingly positive. Students mention noticeable improvements in the quality of their writing and increasingly report that they believe themselves to be in control of both their learning and their grades. Furthermore, they begin to see their teacher in a new light—“as one who will help them achieve their best work, not as one who just gives out grades . . . as a coach encouraging them along the long race of learning.” Final course grades also confirm the value of the new policies: A much higher percentage of students earn grades of C or better than has been true in past years. (Action research project described in A. K. Smith, 2009.)

- Effective teachers don't simply transmit new information and skills to students; they also work hard to help students *master* the information and skills. In the case study just presented, what various strategies does Ms. Smith use to foster her students' writing development?



Teaching other people—especially teaching the generation that will follow you into the adult world—can be one of the most rewarding professions on the planet. It can also be a very challenging profession. Certainly effective teaching involves presenting a topic or skill in such a way that students can understand and master it. Yet it involves many other

## CHAPTER OUTLINE

### Teaching as Evidence-Based Practice

#### Understanding and Interpreting Research Findings

Quantitative Research

Qualitative Research

Mixed-Methods Research

Interpreting Research Results: A Cautionary Note

From Research to Practice: The Importance of Principles and Theories

#### Collecting Data and Drawing Conclusions about Your Own Students

Assessing Students' Achievements and Interpreting Their Classroom Behaviors

Conducting Action Research

#### Developing as a Teacher Strategies for Studying and Learning Effectively

things as well. For instance, teachers must motivate students to *want* to learn the subject matter, must help students recognize what true mastery involves, and—in order to appropriately individualize instruction—must assess each student’s progress in his or her learning and development. And, in general, effective teachers create an environment in which students believe that if they work hard and have reasonable support, they can achieve at high levels. In the opening case study, Anne Smith does all of these things.

Mastering the multifaceted nature of teaching takes time and practice, of course. But it also takes knowledge about human learning and motivation, developmental trends, individual and group differences, and effective classroom practices. Such topics are the domain of **educational psychology**. This book will help you understand children and adolescents—how they learn and develop, how they’re likely to be similar to but also different from one another, what topics and activities are apt to engage them in the classroom, and so on. It will also give you a toolbox of strategies for planning and carrying out instruction, creating an environment that keeps students motivated and on task, and assessing students’ progress and achievement.

## Teaching as Evidence-Based Practice

You yourself have been a student for many years now, and in the process you’ve undoubtedly learned a great deal about how children change over time and about how teachers can foster their learning and development. But exactly how much *do* you know? To help you find out, we authors offer a short pretest, Ormrod’s Own Psychological Survey (OOPS).

### EXPERIENCING FIRSTHAND

#### ORMROD’S OWN PSYCHOLOGICAL SURVEY (OOPS)

Decide whether each of the following statements is *true* or *false*.

- |      |       |  |
|------|-------|--|
| True | False | 1. Some children are predominantly left-brain thinkers, whereas others are predominantly right-brain thinkers. |
| True | False | 2. Children’s personalities are largely the results of their home environments.                                |
| True | False | 3. Instruction is most effective when it is tailored to students’ individual learning styles.                  |
| True | False | 4. The best way to learn and remember a new fact is to repeat it over and over.                                |
| True | False | 5. Students often misjudge how much they know about a topic.   |
| True | False | 6. Anxiety sometimes helps students learn and perform more successfully in the classroom.                      |
| True | False | 7. Playing video games can enhance children’s cognitive development and school achievement.                    |
| True | False | 8. The ways in which teachers assess students’ learning influence what and how students actually learn.        |

Following are the correct answers to each item, along with an explanation regarding *why* it is true or false.

1. *Some children are predominantly left-brain thinkers, whereas others are predominantly right-brain thinkers.* FALSE. With the development of new medical technologies in recent years, researchers have learned a great deal about how the human brain works and which parts of it specialize in which aspects of human thinking. The two halves, or *hemispheres*, of the brain do seem to have somewhat different specialties, but they continually communicate and collaborate in tackling even the simplest of daily tasks. For all intents and purposes, there’s no such thing as left-brain or right-brain thinking (Bressler, 2002; M. I. Posner & Rothbart, 2007).
2. *Children’s personalities are largely the results of their home environments.* FALSE. Certainly children’s home environments mold their behaviors to some extent, but so, too, can teachers and other people outside the family have some influence (e.g., Morelli & Rothbaum, 2007).

The brain’s structure, functioning, and development are discussed in Chapter 2 and in Applying Brain Research features throughout the book.



Furthermore, inherited characteristics have a significant impact on children's personalities. From day 1 infants are noticeably different in the extent to which they're calm or fussy, shy or outgoing, fearful or adventurous, and attentive or easily distractible. Such differences in *temperament* appear to have their roots in biology and genetics, and they persist throughout the childhood years and into adulthood (Kagan & Snidman, 2007; Keogh, 2003; Rothbart, 2011).

3. *Instruction is most effective when it is tailored to students' individual learning styles.* FALSE. Contrary to a popular belief, most measures of supposed "learning styles" merely reflect students' self-reported *preferences*, and tailoring instruction to such preferences doesn't noticeably enhance students' learning or academic achievement (Kirschner & van Merriënboer, 2013; Kozhevnikov, Evans, & Kosslyn, 2014; Krätzig & Arbuthnott, 2006; Mayer & Massa, 2003). It is far more important that teachers base their instructional practices on knowledge of the cognitive processes that underlie how virtually *all* students think and learn.
4. *The best way to learn and remember a new fact is to repeat it over and over.* FALSE. Although repeating information several times is better than doing nothing at all, repetition of specific facts is a relatively *ineffective* way to learn. Students learn information more easily and remember it longer when they connect it with things they already know. One especially effective strategy is **elaboration**: using prior knowledge to expand or embellish on a new idea in some way, perhaps by drawing inferences from a historical fact, identifying new examples of a scientific concept, or thinking of situations in which a mathematical procedure might be helpful (J. R. Anderson, 2005; Graesser & Bower, 1990).
5. *Students often misjudge how much they know about a topic.* TRUE. Most adults and children are *not* the best judges of what they do and don't know. For example, many students think that if they've spent a long time studying a textbook chapter, they must know its contents very well. Yet if they've spent most of their time studying ineffectively—perhaps by "reading" while thinking about something else altogether or by mindlessly copying definitions—they may know far less than they think they do (N. J. Stone, 2000; Thiede, Griffin, Wiley, & Redford, 2009).
6. *Anxiety sometimes helps students learn and perform more successfully in the classroom.* TRUE. Many people think that anxiety is always a bad thing. In fact, a *little bit* of anxiety can actually *improve* learning and performance, especially when students perceive a task to be something they can accomplish with reasonable effort. For instance, a small, manageable amount of anxiety can spur students to complete their work carefully and to study for tests (Cassady, 2010b; N. E. Perry, Turner, & Meyer, 2006; Shipman & Shipman, 1985).
7. *Playing video games can enhance children's cognitive development.* TRUE—or more accurately, SOMETIMES TRUE. A great deal of time spent playing video games *instead of* reading, doing homework, and engaging in other school-related activities can definitely interfere with children's long-term academic success. But some video games can be powerful tools for promoting important cognitive abilities, such as sustained attention and spatial reasoning (Gentile, 2011; Rothbart, 2011; Tobias & Fletcher, 2011). And increasingly, educational technologists have been designing highly motivating video games that simulate real-world problems and foster complex problem-solving skills (Barab, Gresalfi, & Ingram-Goble, 2010; Gee, 2010; Squire, 2011).
8. *The ways in which teachers assess students' learning influence what and how students actually learn.* TRUE. We see this principle in action in the opening case study: When Anne Smith's "No D" and multiple-submission policies convey the message that students can't get by with marginal work, students are more likely to seek feedback about their work, benefit from their mistakes, and enhance their writing skills. *Good* assessments encourage cognitive processes essential for high-quality learning. For example, students are more likely to pull class material into an integrated, meaningful whole if they expect assessment activities to require such synthesis, and they're more likely to focus on applying what they learn to new situations if they think that assessments will involve application tasks (Carpenter, 2012; N. Frederiksen, 1984b; Lundeberg & Fox, 1991).

Chapter 3 discusses temperament and personality development.

Chapter 5 describes individual differences in cognitive abilities and dispositions that can significantly impact students' learning and academic achievement. Chapter 6 describes general mental processes that underlie effective thinking, learning, and memory.

Chapter 6 discusses elaboration and its implications for instructional practice.

Chapter 7 describes this *illusion of knowing* in more detail.

Chapter 11 explores anxiety's effects in different situations.

Chapter 3 describes potential adverse effects of violent video games on children's aggression. Chapter 12 explores potential benefits of appropriately designed video games.

Chapter 14 and Chapter 15 explore numerous ways in which assessment practices affect students' learning.

How many of the OOPS items did you answer correctly? Did some of the false items seem convincing enough that you marked them true? Did one or more of the true items contradict certain beliefs you had? If either of these was the case, you're hardly alone. College students often agree with statements that seem to be obviously "true" but are, in fact, partially or completely incorrect (Gage, 1991; L. S. Goldstein & Lake, 2000; Woolfolk Hoy, Davis, & Pape, 2006).

It's easy to be persuaded by "common sense" and to assume that what seems logical must be true. Yet common sense and logic don't always give us the real scoop about how people actually learn and develop, nor do they always give us appropriate guidance about how best to help students succeed in classrooms. Instead, our knowledge about learning and instruction must come from a more objective source of information—that is, from systematic research.

As professionals, teachers are *decision makers* who must choose among many, many possible strategies for helping students learn and develop. Certainly teaching is an art to some degree: Good teachers are creative and innovative, and they add many imaginative touches to classroom lessons and activities. But that art must be based on a firm foundation of research findings both about how human beings learn and about how teachers can help them learn effectively; in other words, it must be based on the *science of learning* and the *science of instruction*. Ultimately, good teaching involves **evidence-based practices**—the use of instructional methods and other classroom strategies that research has consistently shown to bring about significant gains in students' development and academic achievement.

MyEdLab Self-Check 1.1

## Understanding and Interpreting Research Findings

Many research studies involve **quantitative research**: They yield numbers that reflect percentages, frequencies, or averages related to certain characteristics or phenomena. For example, a quantitative study might provide information about students' scores on achievement tests, students' responses to rating-scale questionnaires, or school district records of students' attendance and dropout rates.

Other studies involve **qualitative research**: They yield nonnumerical data—perhaps in the form of verbal reports, written documents, pictures, videos, or maps—that capture many aspects of a complex situation. For example, a qualitative study might involve one-on-one interviews in which students describe their hopes for the future, a detailed case study of interpersonal relationships within a tight-knit clique of adolescent girls, or in-depth observations of several teachers who create distinctly different psychological atmospheres in their classrooms.

To a considerable degree, the research study described at the beginning of the chapter is a quantitative one: Anne Smith tabulates students' responses to various survey questions and computes the percentages of various final class grades. But when she collects the completed surveys, she also looks closely at students' specific comments and suggestions—qualitative information.

Not all research on learning and instruction is *good* research, of course. Furthermore, people sometimes draw inappropriate conclusions from even the best of research studies. It's important, therefore, that teachers understand what various kinds of research studies can and cannot tell us about learning and instruction.

### QUANTITATIVE RESEARCH

Quantitative research studies vary widely in nature, but you might think of them as falling into four general categories: descriptive, correlational, experimental, and quasi-experimental. These categories yield different kinds of information and warrant different kinds of conclusions.

### DESCRIPTIVE STUDIES

A **descriptive study** does exactly what its name implies: It *describes* a situation. Descriptive studies might give us information about the characteristics of students, teachers, or schools. They might also provide information about how often certain events or behaviors occur. In general, descriptive studies enable us to draw conclusions about the way things are—the current state of affairs.

## CORRELATIONAL STUDIES

A **correlational study** explores possible associations among two or more variables. For instance, it might tell us how closely various human characteristics are associated with one another, or it might give us information about the consistency with which certain human behaviors occur in conjunction with certain environmental conditions. In general, correlational studies enable us to draw conclusions about **correlation**: the extent to which two characteristics or phenomena tend to be found together or to change together. Two variables are correlated when one tends to increase as the other increases (a *positive correlation*) or when one tends to *decrease* as the other increases (a *negative correlation*). Correlations are often described numerically with a statistic known as a *correlation coefficient*.

Sometimes correlational studies involve comparing two or more groups that differ with respect to a particular characteristic, such as age, gender, or background.<sup>1</sup> For example, a correlational study might compare the average achievement test scores of boys and girls, or it might investigate whether young children who have had considerable exposure to reading materials at home learn to read more quickly at school than children without such exposure.

Any correlation between two variables allows us to make *predictions* about one variable when we know the status of the other. For example, if we find that, on average, 15-year-olds are more capable of abstract thought than 10-year-olds—in other words, if age and abstract thinking ability are correlated—we can predict that high school students will benefit more from an abstract discussion of democratic government than fourth graders will. And if we find that children learn to read more easily if they've had many previous experiences with books at home, we might take proactive steps to enhance the early literacy skills of children without such experiences. Yet our predictions will be imprecise ones at best, with exceptions to the general rule. For example, even if, *on average*, 15-year-olds have considerable ability to think about abstract ideas, some 15-year-olds will often struggle with abstract subject matter.

A more significant limitation of correlational studies is that although they may demonstrate that a relationship exists, they never tell us for certain *why* it exists. They don't tell us what specific factors—previous experiences, personality, motivation, or perhaps other things we haven't thought of—are the cause of the association we see. In other words, *correlation does not necessarily indicate causation*.

## EXPERIMENTAL AND QUASI-EXPERIMENTAL STUDIES

Descriptive and correlational studies describe things as they exist or have previously existed naturally in the environment. In contrast, an **experimental study**, or **experiment**, is a study in which the researcher intentionally changes, or *manipulates*, one or more aspects of the environment (often called *independent variables*) and then measures the effects of such changes on something else. In educational research the “something else” being affected (a *dependent variable*) is typically some aspect of student behavior—perhaps end-of-semester grades, persistence in trying to solve difficult math problems, or ability to interact appropriately with peers. In a good experiment, a researcher *separates and controls variables*, testing the possible effects of one independent variable while holding all other potentially influential variables constant.

Some experimental studies involve simultaneously giving a single group of individuals two or more distinct treatments and comparing the specific effects of each treatment. Other experimental studies involve two or more groups that are treated differently. The following three examples illustrate the multiple-group approach:

- A researcher uses two different instructional methods to teach reading comprehension skills to two different groups of students. (Instructional method is the independent variable.) The researcher then assesses students' reading ability (the dependent variable) and compares the average reading-ability scores of the two groups.
- A researcher gives three different groups of students varying amounts of practice with woodworking skills. (Amount of practice is the independent variable.) The researcher

You can learn about correlation coefficients in Appendix A.

<sup>1</sup>Such group-comparison studies are sometimes called *causal-comparative studies*. However, as B. Johnson (2001) has pointed out, this label may mislead us to believe that such studies reveal cause-and-effect relationships, when in fact they do not.

subsequently scores the quality of each student's woodworking project (the dependent variable) and compares the average scores of the three groups.

- A researcher gives one group of students an intensive instructional program designed to improve their study skills. The researcher gives another group either no instruction or, better still, instruction in subject matter unrelated to study skills. (Presence or absence of instruction in study skills is the independent variable.) The researcher later (a) assesses the quality of students' study skills and (b) obtains their grade point averages—thus, there are two dependent variables—to see whether the program had an effect.

Each of these examples includes one or more **treatment groups** that are recipients of a planned intervention. The third example also includes a **control group** that receives either no intervention or a *placebo* intervention that's unlikely to affect the dependent variable(s) in question. In many experimental studies, participants are assigned to groups *randomly*—for instance, by drawing names out of a hat. Such random assignment is apt to yield groups that are, on average, roughly equivalent on other variables (e.g., pre-existing ability levels, personality characteristics, motivation) that might affect the dependent variable(s).

Random assignment to groups isn't always possible or practical, however, especially in research studies conducted in actual schools and classrooms. For example, when studying the potential benefits of a new teaching technique or therapeutic intervention, a researcher may not be able to completely control which students receive the experimental treatment and which do not, *or* a particular treatment or intervention may have important benefits for *all* students. In such situations, researchers often conduct a **quasi-experimental study**, in which they take into account but don't completely control other influential factors. Following are two examples:

- A researcher implements a new after-school homework program at one high school and identifies a comparable high school without such a program to serve as a control group. The researcher obtains achievement test data for students at both schools both before and after the program's implementation. Ideally, to document the homework program's effectiveness, the average test scores for the two high schools should be the same *before* program begins but different *after* its implementation. (Such an approach is known as a *pretest–posttest study*.)
- Three researchers want to study the effects of safety instructions on children's behaviors on the playground. The researchers present the instructional intervention to first graders one week, second graders the following week, and kindergartners and third graders the week after that. The researchers monitor students' playground behavior before, during, and after the intervention to determine whether each grade-level group's risky playground behavior decreases immediately following the intervention. (Such an approach is known as a *multiple-baselines study*; study described here was conducted by Heck, Collins, & Peterson, 2001.)

When researchers conduct quasi-experimental studies, they don't control for all potentially influential variables and so can't completely rule out alternative explanations for the results they obtain. For instance, in the preceding after-school homework program example, possibly the school getting the new homework program—but *only* that school—has simultaneously begun to use more effective instructional methods, and those methods are the reason for any increase in achievement scores. And in the playground safety example, perhaps certain other things coincidentally happened in the four classrooms during their respective safety-instructions weeks, and those things were the true causes of children's behavior changes.

When carefully designed and conducted, experimental studies and, to a lesser degree, quasi-experimental studies enable us to draw conclusions about *causation*—about *why* behaviors occur. Yet for practical or ethical reasons, many important questions in education don't easily lend themselves to experimental manipulation and tight control of other potentially influential variables. For instance, although we might reasonably hypothesize that children can better master difficult math concepts if they receive individual tutoring, most public school systems can't afford such a luxury, and it would be unfair to provide tutoring for some students and deny it to a control group of other, equally needy students. And, of course, it would be highly unethical to study the effects of aggression by intentionally placing some children in a violent environment. Some important

educational questions, then, can be addressed only with descriptive or correlational studies, even though such studies can't help us pin down precise cause-and-effect relationships.

Columns 2, 3, and 4 of Table 1.1 contrast descriptive, correlational, experimental, and quasi-experimental studies and give examples of the kinds of questions each type of study might address.

### QUALITATIVE RESEARCH

Rather than address questions related to quantity—questions regarding *how much*, *how many*, or *how often*—researchers sometimes want to look in depth at the nature of certain characteristics or behaviors. Imagine, for example, that a researcher wants to find out what kinds of study strategies high-achieving students tend to use. One approach would be simply to ask the students questions such as “What things do you do to help you remember what you read in your

## COMPARE/CONTRAST

**TABLE 1.1 • Contrasting Various Types of Research**

	QUANTITATIVE RESEARCH STUDIES			QUALITATIVE RESEARCH STUDIES (DESCRIPTIVE)
	DESCRIPTIVE STUDIES	CORRELATIONAL STUDIES	EXPERIMENTAL AND QUASI-EXPERIMENTAL STUDIES	
<b>General Nature and Purposes</b>	<ul style="list-style-type: none"> <li>• Capture the current state of affairs regarding a real-world issue or problem</li> </ul>	<ul style="list-style-type: none"> <li>• Identify associations among characteristics, behaviors, and/or environmental conditions</li> <li>• Enable predictions about one variable, given knowledge of the degree or quantity of another variable</li> <li>• Provide an alternative when experimental manipulations are unethical or impossible</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulate one (independent) variable in order to observe its possible effect on another (dependent) variable</li> <li>• Eliminate other plausible explanations for observed outcomes (especially in carefully controlled experimental studies)</li> <li>• Enable conclusions about cause-and-effect relationships</li> </ul>	<ul style="list-style-type: none"> <li>• Portray the complex, multifaceted nature of human behavior, especially in real-world social settings</li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>• Don't enable either (a) predictions about one variable based on another variable or (b) conclusions about cause-and-effect relationships</li> </ul>	<ul style="list-style-type: none"> <li>• Enable only imprecise predictions, with many exceptions to the general relationships observed</li> <li>• Don't enable conclusions about cause-and-effect relationships</li> </ul>	<ul style="list-style-type: none"> <li>• May not completely eliminate alternative explanations for observed outcomes (especially true for quasi-experimental studies)</li> <li>• In some cases, involve artificial laboratory conditions that don't resemble real-life learning environments (true for many tightly controlled experimental studies)</li> </ul>	<ul style="list-style-type: none"> <li>• Don't enable either predictions or conclusions about cause-and-effect relationships</li> </ul>
<b>Examples of Questions That Might Be Addressed</b>	<ul style="list-style-type: none"> <li>• How pervasive are gender stereotypes in popular children's literature?</li> <li>• What kinds of aggressive behaviors occur in schools, and with what frequencies?</li> <li>• How well have students performed on a recent national achievement test?</li> </ul>	<ul style="list-style-type: none"> <li>• Are better readers also better spellers?</li> <li>• Are students more likely to be aggressive at school if they often see violence at home or in their neighborhoods?</li> <li>• To what extent are students' class grades correlated with their scores on achievement tests?</li> </ul>	<ul style="list-style-type: none"> <li>• Which of two reading programs produces greater gains in reading comprehension?</li> <li>• Which method is most effective in reducing aggressive behavior—reinforcing appropriate behavior, punishing aggressive behavior, or a combination of both?</li> <li>• Do different kinds of tests (e.g., multiple-choice vs. essay tests) encourage students to study in different ways?</li> </ul>	<ul style="list-style-type: none"> <li>• What things do high-achieving students say they do “in their heads” when they read and study their textbooks?</li> <li>• What distinct qualities characterize high schools in which members of various adolescent gangs interact congenially and respectfully?</li> <li>• In what ways do teachers' instructional practices change when their jobs and salaries depend on their students' scores on statewide or national achievement tests?</li> </ul>

textbooks?” and “How do you prepare for tests in your classes?” Students’ responses to such open-ended questions are apt to go in many different directions, sometimes focusing on various behaviors (e.g., taking notes, working on practice problems) and at other times focusing on various mental processes (e.g., trying to make sense of a passage, generating new examples of concepts). Although it might be possible to categorize students’ responses and count those falling into each category (thereby obtaining some quantitative data), the researcher may also want to preserve the multifaceted qualities of students’ responses by reporting word-for-word excerpts from the interviews.

Qualitative research is often used to explore the complex nature of human behavior in social settings—perhaps in particular social groups, classrooms, schools, or cultures. For example, in-depth qualitative studies have contributed in important ways to our knowledge of school characteristics that affect the academic and social success of students from diverse backgrounds (e.g., Hemmings, 2004; Ladson-Billings, 1995b; Ogbu, 2003).

Like descriptive quantitative studies, qualitative studies *describe* the current state of affairs; they’re inappropriate for drawing hard-and-fast conclusions about correlation or cause-and-effect. The rightmost column of Table 1.1 presents examples of questions that might best be answered by qualitative research.

## MIXED-METHODS RESEARCH

You shouldn’t think of quantitative and qualitative research as an either-or situation. Like Anne Smith in the opening case study, many educational researchers can best address their research questions by combining elements of both quantitative and qualitative research in what is known as a **mixed-methods study**. For example, in a study described in the *American Educational Research Journal* in 1999, researchers Melissa Roderick and Eric Camburn tracked more than 27,000 students’ academic progress as they made the transition from small elementary or middle schools to much larger high schools in the Chicago public school system. Many students showed a sharp decline in academic achievement in ninth grade, their first year of high school. More than 40% of first-semester ninth graders (males especially) failed at least one course, and students who achieved at low levels early in their high school careers were more likely to drop out before graduation.

Such troubling findings are examples of quantitative data, but the researchers also obtained qualitative information that can help us understand the numbers. For instance, they described a student named Anna, who had done well in her neighborhood K–8 school and seemingly had the basic skills she needed to successfully tackle a high school curriculum. Unfortunately, Anna was overwhelmed by the new demands that her ninth-grade classes placed on her, and her first-semester final grades included several Ds and an F. In an interview with one of the researchers, she gave the following explanation:

In geography, “he said the reason why I got a lower grade is ‘cause I missed one assignment and I had to do a report, and I forgot that one.” In English, “I got a C . . . ‘cause we were supposed to keep a journal, and I keep on forgetting it ‘cause I don’t have a locker. Well I do, but my locker partner she lets her cousins use it, and I lost my two books there. . . . I would forget to buy a notebook, and then I would have them on separate pieces of paper, and I would lose them.” And, in biology, “the reason I failed was because I lost my folder . . . it had everything I needed, and I had to do it again, and, by the time I had to turn in the new folder, I did, but he said it was too late. . . .” (Roderick & Camburn, 1999, p. 305)

Additionally, the interview revealed Anna’s perception of most school faculty members as being uncaring, inattentive to students’ difficulties, and inflexible in evaluating students’ achievement.

If Anna’s behaviors, experiences, and perceptions are common ones—and apparently they are—they point to the need for greater faculty support as students make the transition from a close-knit elementary or K–8 school to a more impersonal high school environment. This support might be not only emotional but also *academic*—for instance, it should probably include instruction and guidance in organizational skills and effective study habits. We must be careful in drawing such inferences, however. Remember, qualitative data are essentially *descriptive* data: They tell

us *how things are* rather than *what causes what*. Any hypotheses about cause-and-effect relationships drawn from qualitative data are only that—hypotheses—that ideally should be tested with experimental, quantitative studies.

## INTERPRETING RESEARCH RESULTS: A CAUTIONARY NOTE

Whenever we look at the results of a research study, we can determine that a particular condition or intervention has led to a particular outcome—that is, there is a cause-and-effect relationship between the two—only if we've eliminated all other possible explanations for the results we've observed. As an example, imagine that Hometown School District wants to find out which of two reading programs, *Reading Is Great* (RIG) or *Reading and You* (RAY), leads to better reading in third grade. The district asks each of its third-grade teachers to choose one of these two reading programs and use it throughout the school year. The district then compares the end-of-year achievement test scores of students in the RIG and RAY classrooms and finds that RIG students have substantially higher reading comprehension scores than RAY students. We might quickly jump to the conclusion that RIG promotes better reading comprehension than RAY—in other words, that a cause-and-effect relationship exists between the instructional method and reading comprehension. But is this really so?

Not necessarily. The fact is, the school district hasn't eliminated all other possible explanations for the difference in students' reading comprehension scores. Remember, the third-grade teachers personally *chose* the instructional program they used. Were the teachers who chose RIG different in some way from those who chose RAY? For instance, were RIG teachers more open-minded and enthusiastic about using innovative methods, did they have higher expectations for their students, or did they devote more class time to reading? Or, perhaps, did the RIG teachers have students who were, on average, better readers to begin with? If the RIG and RAY classrooms were different from each other in any of these ways—or perhaps different in some other way we haven't thought of—then the district hasn't eliminated alternative explanations for why the RIG students have outperformed the RAY students. A better way to study the causal influence of a reading program on reading comprehension would be to *randomly assign* third-grade classes to the RIG and RAY programs, thereby making the two groups similar (on average) in terms of student abilities and teacher characteristics.

Whenever you read descriptions of research findings—whether they be in professional journals, in popular print media, on television, or on Internet websites—be careful that you don't jump too quickly to conclusions about what factors are affecting students' learning, development, and behavior in particular situations. Scrutinize the reports carefully, always with these questions in mind: *Have the researchers separated and controlled variables that might have an influence on the outcome? Have they ruled out other possible explanations for their results?* Only when the answers to these questions are undeniably *yes* and *yes* should you draw a conclusion about a cause-and-effect relationship.



Draw conclusions about cause-and-effect relationships only when other possible explanations for an outcome have been eliminated.

## FROM RESEARCH TO PRACTICE: THE IMPORTANCE OF PRINCIPLES AND THEORIES

Consistent patterns in research findings have led psychologists to make many generalizations about students' learning and development, along with many generalizations about classroom strategies that can effectively enhance students' academic achievement and personal and social well-being. Some of these generalizations take the form of **principles**, which identify certain factors that affect learning or development and describe the specific effects these factors have. For example, consider this principle:

A behavior that is followed by a satisfying state of affairs—a reward—is more likely to occur again than a behavior not followed by a reward.

In this principle, a particular factor (a rewarding consequence) is identified as having a particular effect (an increase in the behavior's frequency). The principle can be observed in many situations; following are two examples:

- A student's interpersonal skills improve after we begin praising the student for interacting with peers respectfully and cooperatively. (Here the reward is *praise*.)

- A student becomes more diligent in completing math assignments once we've begun to tailor assignments to the student's current ability level, such that the student more often achieves success in the assignments. (Here the reward is a *success experience*.)

Principles are most useful when they can be applied to many different situations. The “reward” principle—many psychologists instead use the term *reinforcement*—is an example of such broad applicability: It holds true for many different types of learning and a wide variety of pleasant consequences.

Whereas principles tell us *what* factors are important for human learning and development, **theories** tell us *why* certain factors might be important. More specifically, theories provide possible explanations about the underlying mechanisms involved in learning or development. By giving us ideas about why we are consistently observing certain cause-and-effect relationships, theories can ultimately help us create learning environments that facilitate students' learning, development, and achievement to the greatest extent possible.

Let's consider an example. One prominent theory of how people learn—information processing theory—proposes that attention is an essential ingredient in the learning process. More specifically, if a learner pays attention to new information, the information moves from one component of the human memory system (the sensory register) to another, longer-lasting component (working memory). If the learner *doesn't* pay attention, the information quickly disappears from the memory system; in the words of a common expression, the information “goes in one ear and out the other.” The importance of attention in information processing theory suggests that strategies that capture and maintain students' attention—perhaps assigning interesting reading materials or presenting intriguing real-world problems—are apt to enhance students' learning and achievement. It also alerts us to the fact that a concrete reward for learning something new might be detrimental (rather than helpful) if it subsequently *distracts* a student's attention from a learning activity.

You might think of principles as reflecting relatively enduring conclusions about cause-and-effect relationships related to people's learning and development. Principles tend to be fairly stable over time: Researchers observe many of the same factors having an influence over and over again. In contrast, psychological theories are rarely, if ever, set in stone. Instead, they're continually expanded and modified as additional data come to light, and in some cases one theory may be abandoned in favor of another that better explains a particular phenomenon. Furthermore, different theories focus on different aspects of human functioning, and psychologists haven't yet pulled them together into a single mega-theory that adequately accounts for all the diverse phenomena and experiences that comprise human existence.

Although psychological theories will inevitably change in the future, they can be quite valuable even in their unfinished forms. They help us integrate thousands of research studies into concise understandings of human learning and development, and they enable us to draw inferences and make predictions about how students are apt to perform and achieve in particular classroom situations. In general, theories help us to both *explain* and *predict* human behavior, thereby giving us countless ideas about how best to promote students' academic and social success at school.

In this book, you'll encounter a variety of theories related to different aspects of human functioning, and they don't always lead to the same conclusions about human beings' thinking and behavior. Yet we authors firmly believe that each theory we introduce offers unique insights and thus has important things to say about students' classroom learning and performance. We hope that our readers will take an equally open-minded approach. It's probably most helpful to think of psychological theories in terms of their *usefulness* in classroom decision making, rather than in terms of their *this-is-the-ultimate-truth* completeness and accuracy.

Chapter 6 describes information processing theory in depth.

#### MyEdLab Self-Check 1.2

**MyEdLab Application Exercise 1.1.** In this exercise, you can practice distinguishing among various kinds of research studies and determining reasonable conclusions from each one.



## Collecting Data and Drawing Conclusions about Your Own Students

Certainly the collection and interpretation of quantitative and qualitative data aren't restricted only to highly trained researchers who work in universities and research laboratories. In fact, practicing teachers continually collect and interpret data about their own students through formal and informal assessments of students' written work and classroom behaviors. Furthermore, many teachers plan and conduct their own research to help them better understand their students and schools—a process known as *action research*.

### ASSESSING STUDENTS' ACHIEVEMENTS AND INTERPRETING THEIR CLASSROOM BEHAVIORS

Most teachers regularly assess what their students know and can do, perhaps by examining students' performance in assignments, projects, oral or technology-based presentations, and quizzes. But effective teachers don't limit themselves only to such formal, planned evaluations. They continually observe their students in a variety of contexts—not only in the classroom but also in the hallways and cafeteria, on the playground, during parent–teacher conferences, and so on—for clues about what students might be thinking, believing, feeling, and learning. Students' comments, questions, body language, work habits, and interactions with friends and classmates can provide valuable insights into their learning, development, and motivation.

To get your feet wet in the process of assessment, read 7-year-old Justin's short story “The Pet Who Came to Dinner,” presented in Figure 1.1. As you read it, consider what you might conclude about Justin's progress in writing. Consider, too, what inferences you might make about Justin's family and home life.

As you can see, Justin has learned how to spell some words (e.g., *dinner*, *came*) but not others (e.g., he spells *once* as “owans” and *started* as “stor did”). Overall, he knows which alphabet letters represent which sounds in speech, but he sometimes reverses the letter *d* so that it looks like a *b*, and he occasionally leaves out sounds in his word spellings (e.g., his spelling of *drink* begins with *b* and omits the *n* sound). Justin has made some progress in common spelling patterns (e.g., the *-ing* suffix for verbs) and in the use of periods and apostrophes. He has learned to tell a simple story, but he does so merely by listing a series of seemingly unrelated events, and he hasn't yet learned that the title of a story should appear on a line by itself, centered at the top of the page.

Justin's story offers a few hints about home life as well. For instance, it appears that Justin lives with two parents, and he talks about the pet reading the newspaper (“nuwspapr”), suggesting that reading is a familiar activity at home. Are such inferences about Justin accurate? Not necessarily. The conclusions we reach about our students are—like the theories that researchers formulate about learning and development—only reasonable guesses based on the evidence at hand. We must think of such conclusions as tentative *hypotheses* to be tested further, rather than as indisputable *facts*.

### CONDUCTING ACTION RESEARCH

Like Anne Smith in the opening case study, teachers sometimes have questions that existing research findings don't fully answer. In **action research**, teachers conduct systematic studies of issues and problems in their own schools, with the goal of seeking more effective strategies for working with students. For example, an action research project might involve examining the effectiveness of a new teaching technique, seeking students' opinions on a new classroom policy (as Ms. Smith does), or ascertaining reasons why many students rarely complete homework assignments.



Use assessment results to form hypotheses—but not to draw hard-and-fast conclusions—about students' current characteristics and abilities and about effective instructional strategies.

**FIGURE 1.1** Seven-year-old Justin's story “The Pet Who Came to Dinner.”

The pet who came to  
Dinner. Owans ther was a  
cat who came to  
Dinner he eat all the  
food. He break all the  
milk. He break the wack  
too. Owans He was can  
he ask for desert for  
about we wr aving cake.  
Ours we bring out the  
cake he rust over to us  
and eat all the cake too.  
Then he ran to the  
nuwspapr and read and  
read then he ran up  
to my moms and dats bama  
and stor did soeing.

Any action research study typically involves the following steps (described in greater depth in Mills, 2011):

1. *Identify an area of focus.* The teacher–researcher begins with a problem and gathers preliminary information that might shed light on the problem, perhaps by reading relevant books or journal articles, surfing the Internet, or discussing the issue with colleagues or students. The teacher–researcher then identifies one or more specific questions to address and develops a research plan (data-collection techniques, necessary resources, schedule, etc.) for answering those questions. At this point, the teacher also seeks permission to conduct the study from school administrators and any other appropriate authorities. Depending on the nature of the study, parents’ permission may be necessary as well.
2. *Collect data.* The teacher–researcher collects data relevant to the research questions. Such data might, for example, be obtained from questionnaires, interviews, achievement tests, students’ journals or portfolios, existing school records (e.g., attendance patterns, school suspension rates), observations, or any combination of these.
3. *Analyze and interpret the data.* The teacher–researcher looks for patterns in the data. Sometimes the analysis involves computing particular statistics (e.g., percentages, averages, correlation coefficients)—this would be a quantitative study. At other times the analysis involves an in-depth, nonnumerical inspection of the data—this would be a qualitative study. In either case, the teacher–researcher relates the findings to the original research questions.
4. *Develop an action plan.* The final step distinguishes action research from the more traditional research studies described earlier in the chapter. In particular, the teacher–researcher uses the information collected to *take action*—for instance, to change instructional strategies, school policies, or the classroom environment.

Many colleges and universities now offer courses in action research. You can also find many inexpensive paperback books on the topic.

#### MyEdLab Self-Check 1.3

**MyEdLab Application Exercise 1.2.** In this interactive activity, you can gain practice in identifying useful information from students’ behaviors by watching and analyzing actual classroom examples.










## Developing as a Teacher

As a beginning teacher, you may initially find your role a bit overwhelming. Virtually any classroom will be one of nonstop action requiring you to be constantly attentive and on your toes, and there will always be a great deal to think about.


If you are currently enrolled in a teacher education program, you should think of your program as a very good start on the road to becoming a skillful teacher (Bransford, Darling-Hammond, & LePage, 2005; Brouwer & Korthagen, 2005). However, it is *only* a start. Developing true expertise in any profession, including teaching, takes many years of experience, although even a single year of teaching experience can make a significant difference (Berliner, 2001; Clotfelter, Ladd, & Vigdor, 2007; Henry, Bastian, & Fortner, 2011). So be patient with yourself, and recognize that occasionally feeling a bit unsure and making mistakes is par for the course. As you gain experience, you’ll gradually become able to make decisions about routine situations and problems quickly and efficiently, giving you the time and energy to think creatively and flexibly about how best to teach classroom subject matter (Borko & Putnam, 1996; Bransford, Derry, Berliner, & Hammerness, 2005; Feldon, 2007).

Conducting action research is obviously one possible way of developing your knowledge and skills as a teacher. But in addition, we offer the following strategies—all of them based on research on teacher effectiveness. It’s important to note here that most public and private schools *require* teachers to document their ongoing professional growth through such strategies.

-  *Keep up to date on research findings and innovations in education.* Additional university coursework and in-service training sessions at your school are two good ways to increase your teaching effectiveness (Desimone, 2009; Hattie, 2009; McDonald, Robles-Piña, & Polnick, 2011). In addition, effective teachers typically subscribe to one or more professional journals, and, as time allows, they occasionally attend professional conferences in their area.
-  *Learn as much as you can about the subject matter you teach.* When we look at effective teachers—for example, those who are flexible in their approaches to instruction, help students develop a thorough understanding of classroom topics, and convey obvious enthusiasm for whatever they’re teaching—we typically find teachers who know their subject matter extremely well (Borko & Putnam, 1996; Cochran & Jones, 1998; H. C. Hill et al., 2008).
-  *Learn as much as you can about specific strategies for teaching your particular subject matter.* In addition to knowing general teaching strategies, it’s helpful to acquire strategies specific to the topic you’re teaching—strategies that are collectively known as **pedagogical content knowledge**. Effective teachers typically have a large number of strategies for teaching particular topics and skills. Furthermore, they can usually anticipate—and so can also address—the difficulties students will have and the kinds of errors students will make in the process of mastering a skill or body of knowledge (Baumert et al., 2010; Krauss et al., 2008; P. M. Sadler, Sonnert, Coyle, Cook-Smith, & Miller, 2013; L. S. Shulman, 1986).
-  *Learn as much as you can about the culture(s) of the community in which you are working.* Students are more likely to do well in school when the school curriculum and classroom environment take their cultural backgrounds into account (Brayboy & Searle, 2007; Moje & Hinchman, 2004; Tyler, Uqdah, et al., 2008). Reading about various cultures can certainly be helpful. But ideally, you can best inform yourself about students’ cultural beliefs and practices if you participate in local community activities and converse regularly with community members (Castagno & Brayboy, 2008; McIntyre, 2010).
-  *Continually reflect on and critically examine your assumptions, inferences, and teaching practices.* In the opening case study, Anne Smith reflects on her students’ performance in previous years and then institutes new assessment policies that she thinks might be more motivating and productive. Like Ms. Smith, effective teachers engage in **reflective teaching**: They continually examine and critique their assumptions, inferences, and instructional practices, and they regularly adjust their beliefs and strategies in the face of new evidence (Hammerness, Darling-Hammond, & Bransford, 2005; T. Hogan, Rabinowitz, & Craven, 2003; Larrivee, 2006).
-  *Communicate and collaborate with colleagues.* Effective teachers rarely work in isolation. Instead, they frequently communicate with colleagues in their own school district, across the nation, and, often, in other countries. Furthermore, they regularly coordinate their efforts to enhance students’ learning and personal well-being at a schoolwide level (Bransford, Darling-Hammond, et al., 2005; Raudenbush, 2009). Teacher lounges, email, Internet websites, and blogs—all of these can potentially offer ideas for lesson plans and instructional activities on a wide range of topics. For example, you might look at Smithsonian Education ([smithsonianeducation.org](http://smithsonianeducation.org)), Khan Academy ([khanacademy.org](http://khanacademy.org)), or Open Educational Resources ([oercommons.org](http://oercommons.org)). You should also look at the websites of professional organizations related to your field; the websites for the National Council of Teachers of Mathematics ([nctm.org](http://nctm.org)) and the National Council for the Social Studies ([socialstudies.org](http://socialstudies.org)) are just two of the many possibilities.
-  *Keep in mind, too, that even the most masterful of teachers had to begin their teaching careers as novices, and they probably entered their first classroom with the same concerns and uncertainties that you may initially have.* Most experienced teachers are happy to offer you advice and support during challenging times; in fact, they’re apt to be flattered that you’re asking them! Ideally, teachers and administrators at a single school create a **professional learning community**, in which they share a common vision for students’ learning and achievement, work collaboratively to achieve desired outcomes for all students,

You can find discussions of cultural differences in many chapters of this book, and especially in Chapter 4.

and regularly communicate with one another about their strategies and progress (DuFour, DuFour, & Eaker, 2008; P. Graham & Ferriter, 2009; Raudenbush, 2009).

-  *Believe that you can make a difference in students' lives.* In general, human beings achieve at higher levels in their endeavors when they have high **self-efficacy**—that is, when they believe they are capable of executing certain behaviors or reaching certain goals. Students are more likely to try to learn something if they believe they *can* learn it—in other words, if they have high self-efficacy. But as a teacher, you, too, must have high self-efficacy. Believing that you can be a good teacher will give you confidence to try new strategies and help you persist in the face of occasional setbacks. Students who achieve at high levels are apt to be those whose teachers have confidence that, *as teachers*, they can make a genuine difference as they work both individually in their classrooms and collectively with their colleagues (Holzberger, Philipp, & Kunter, 2013; J. A. Langer, 2000; Skaalvik & Skaalvik, 2008). Ultimately, what teachers do in the classroom *matters* for students, not only in the short term but for years to come (Hattie, 2009; Konstantopoulos & Chung, 2011).

You can learn more about the nature and effects of self-efficacy in Chapter 10.



#### MyEdLab Self-Check 1.4

**MyEdLab Application Exercise 1.3.** In this exercise, you can apply what you have learned about research, theories, and teacher development to a classroom scenario.


## Strategies for Studying and Learning Effectively

You'll learn much more about effective learning and study strategies in upcoming chapters, especially in Chapter 6 and Chapter 7.

As you learn more about educational psychology—and especially as you learn about the nature of human thinking and learning—you'll gain many insights into how you can help students more effectively master classroom subject matter. We authors hope that you'll also gain insights into how *you yourself* can better learn and remember course material. For now, we suggest five general strategies.

-  *Relate what you read to your existing knowledge and prior experiences.* For example, connect new concepts and principles with memorable childhood events, previous coursework, or your general knowledge about human beings and their behavior. In general, people learn and remember things more easily and effectively when they engage in *meaningful learning*—that is, when they connect new information and ideas to things they've previously learned.
-  *Actively consider how some new information might contradict your existing beliefs.* As the earlier OOPS test may have shown you, some of what you currently “know” and believe may be sort-of-but-not-quite accurate or even out-and-out *inaccurate*. People's existing beliefs can occasionally wreak havoc with new learning. For example, many students in teacher education classes reject research findings that appear to be inconsistent with their personal beliefs and experiences (Fives & Gill, 2015; Gregoire, 2003; Richardson, 2003).

As you read about and study educational psychology, then, think about how some ideas and research findings might actually contradict and discredit your prior “knowledge.” When you encounter puzzling or seemingly “wrong” ideas and findings, we hope you'll keep an open mind and, in particular, consider how and why they might have some validity and worth. Ideally, effective learners undergo *conceptual change*: They revise their existing notions to accommodate new and discrepant information.

-  *Tie abstract concepts and principles to concrete examples.* Children become increasingly able to think about abstract ideas as they get older, but people of *all* ages can more readily understand and remember abstract information when they tie it to concrete objects and events. Short examples and lengthier case studies that involve real children and teachers, videos that depict classrooms in action, Experiencing Firsthand exercises such as the OOPS test—all of these can enhance your understanding and memory of new concepts and help you recognize them when you see them in your own work with children and adolescents.

Chapter 6 explores meaningful learning and conceptual change in greater depth.

Chapter 2 discusses the development of abstract thinking and other significant cognitive advancements during the school years.

■ *Elaborate on what you read, going beyond it and adding to it.* Earlier in the chapter we mentioned that the process of *elaboration*—embellishing on new information in some way—enhances learning and memory of the information. So try to think *beyond* the information you read. Draw inferences from the ideas presented. Generate new examples of concepts. Identify your own educational applications of various principles of learning, development, and motivation.

■ *Periodically check yourself to make sure you remember and understand what you have read.* There are times when even the most diligent students don't concentrate on what they're reading—when they're actually thinking about something else as their eyes go down the page. So stop once in a while (perhaps once every two or three pages) to make sure you've really learned and understood the things you've been reading. Try to summarize the material. Ask yourself questions about it, and make sure everything makes sense to you. Check your mastery of various concepts by doing activities and taking self-check quizzes sprinkled throughout a chapter in the Pearson etext. And tackle the Practice for Your Licensure Exam exercise that appears after each chapter summary.

When all is said and done, your goal in studying educational psychology isn't to memorize enough facts that you can get good grades on tests and quizzes. Instead, your goal is to become the best teacher—and also the best *learner*—you can possibly be. As you look forward to your entry into the teaching profession, we urge you to be confident that with time, practice, a solid understanding of how children and adolescents learn and develop, a large toolkit of instructional strategies, and every student's best interests at heart, you can truly make a significant difference in young people's lives.



**MyEdLab Content**  
**Extension 1.1.** For additional strategies, read "Study Tips."

### MyEdLab Self-Check 1.5

# 1



## What Have You Learned?

The beginning of the chapter lists five *learning outcomes*—five general things you should accomplish—while reading and studying this chapter. Let's return now to these outcomes and identify key points related to each one.

- **1.1: Explain the importance of research in classroom decision making.** As teachers, we must make countless daily decisions about how to interact with, instruct, and guide students in our classrooms. Although we can sometimes use simple common sense in making these decisions, such "sense" may occasionally lead us to draw unwarranted, even inaccurate conclusions. We are most likely to make good decisions—those that maximize students' learning and development over the long run—when we base them on contemporary research findings and on general principles and theories that synthesize those findings.
- **1.2: Draw appropriate conclusions from different types of research studies.** Knowledge of findings from both quantitative and qualitative research can greatly enhance our teaching effectiveness, but different kinds of studies are appropriate for different kinds of issues and conclusions. Qualitative studies and descriptive quantitative studies can yield a great deal of information about *how things are* at the present time.

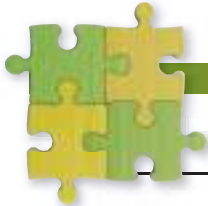
Correlational quantitative studies enable conclusions about *what variables are associated with what other variables*. But only carefully controlled experimental studies—and, to a lesser extent, quasi-experimental studies—yield dependable conclusions about *what causes what*. In some cases, researchers effectively combine both quantitative and qualitative research methods to more fully address their research questions.

- **1.3: Describe several strategies for collecting information about your own students.** To be effective teachers, we must regularly collect data about our students, sometimes by giving them preplanned assessments and sometimes by observing them "on the fly" as they act and interact in class, on the playground, and elsewhere. In addition, we may often find it helpful to conduct action research in order to address questions about our own particular students or about local issues and concerns.
- **1.4: Plan long-term strategies for gaining expertise as a teacher.** Truly effective teachers are also life-long learners. To maximize our development as teachers, we must think critically and reflectively about our assumptions, beliefs, and classroom strategies. We must also continue to modify what we think and do as we acquire new information related to

our profession. Such information can come from a variety of sources, including formal coursework, in-service training sessions, professional journals and conferences, Internet websites, consultation with colleagues and community members, and our own action research.

- **1.5: Use effective strategies when you read and study.** Successful learning is active, *strategic* learning. A few simple strategies can greatly enhance your learning and memory of what you read and study. In particular, we authors urge you

to: (1) connect new concepts and principles to things you already know; (2) reconsider your existing beliefs when new information might potentially discredit them; (3) tie abstract ideas to concrete examples; (4) embellish (elaborate) on the concepts and principles you learn, perhaps by drawing inferences or thinking of possible applications; and (5) regularly check yourself to make sure you understand and can remember what you've read—for instance, by summarizing it or asking yourself questions about it.



## Practice For Your Licensure Exam

### No More Exams

Ms. Rhea is the principal of a small middle school for girls. She encourages teachers to engage in action research to find teaching methods that students not only benefit from but also enjoy. She notices that as the time for exams approaches in each term, students tend to look unhappy, anxious, and exhausted. Ms. Rhea is convinced that the thought of the exams leads to this situation and that doing away with them will improve the well-being of her students.

To test her hypothesis, she asks one of her seventh grade teachers to try out a new approach. Under this approach, students will not have any end-of-term exams but will instead be continuously assessed on classwork and homework throughout the school year. She chooses the seventh grade as there are only two sections; one can serve as the control group. At the end of the school year, Ms. Rhea gives a well-being questionnaire to the section with no formal exams and notices that they score very high on the happiness scale in the questionnaire. She believes that her hypothesis has been proven correct and decides to implement this approach throughout the school.

#### 1. Constructed-response question:

- Explain why Ms. Rhea should exercise caution in interpreting her results.
- Assume that you are the seventh-grade teacher asked to implement the new approach in your section. What suggestions would you share with Ms. Rhea for improving the research design?
- Would it be possible to conduct an experiment to test Ms. Rhea's hypothesis, or would it have to be a quasi-experimental design? Justify your answer, reflecting specifically on the principle of random assignment.

#### 2. Multiple-choice question:

Ms. Rhea wanted to try a new approach with the students in her school. What are the independent variable (IV) and dependent variable (DV) in her study?

- IV: the students' mood; DV: the change in grades of students in the treatment group
- IV: the students' scores on the well-being questionnaire after the structure of the assessment is changed; DV: the behavior of students in the treatment group
- IV: the type of assessment; DV: the overall well-being of students
- IV: the students' scores on the well-being questionnaire before the structure of the assessment is changed; DV: the improvement in the overall well-being of students

#### 3. Multiple-choice question:

Which of the following pieces of information provides the strongest evidence to back Ms. Rhea's beliefs about formal exams and, consequently, student well-being?

- A recent newspaper article suggests that over 40% of middle school students do not like formal exams.
- A recent study indicates that an absence of formal exams is linked to an increase in academic achievement in high school.
- When the new assessment structure was announced to students in the treatment group, one student exclaimed, "Now we can focus on topics we like instead of memorizing everything!"
- A recent study published in an educational psychology journal concluded that when formal assessment and deadlines were removed from the curriculum, students' stress levels decreased significantly and happiness and achievement levels increased significantly.

MyEdLab Licensure Exam 1.1





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# 2

## Cognitive and Linguistic Development

### Learning Outcomes



- 2.1** Describe four principles portraying the general nature of child development and the interactive roles of heredity and environment in guiding it.
- 2.2** Explain how the brain and its development influence children's thinking and learning.
- 2.3** Apply Piaget's theory of cognitive development to classroom practice.
- 2.4** Apply Vygotsky's theory of cognitive development to classroom practice.
- 2.5** Describe developmental changes in language during the school years, and explain how you might adapt instruction to children with diverse linguistic abilities and needs.



## CASE STUDY: APPLE TARTS

Ms. Lombard's fourth-grade class has learned how to add and subtract fractions but not yet studied how to divide by fractions. Nevertheless, students are working in small groups to tackle the following problem, which requires dividing 20 by  $\frac{3}{4}$ :

Mom makes small apple tarts, using three-quarters of an apple for each small tart. She has 20 apples. How many small apple tarts can she make? (J. Hiebert et al., 1997, p. 118)<sup>1</sup>

One group has already agreed that Mom can use three-fourths of each apple to make 20 tarts, with one-fourth of each apple being left to make additional tarts.

- Liz: So you've got twenty quarters *left*.
- Jeanette: Yes, . . . and twenty quarters is equal to five apples, . . . so five apples divided by—
- Liz: Six, seven, eight.
- Jeanette: But three-quarters equals three.
- Kerri: But she can't make only three apple tarts!
- Jeanette: No, you've still got twenty.
- Liz: But you've got twenty quarters, if you've got twenty quarters you might be right.
- Jeanette: I'll show you.
- Liz: No, I've drawn them all here.
- Kerri: How many quarters have you got? Twenty?
- Liz: Yes, one quarter makes five apples and out of five apples she can make five tarts which will make that twenty-five tarts and then she will have, wait, one, two, three, four, five quarters, she'll have one, two, three, four, five quarters. . . . (J. Hiebert et al., 1997, p. 121)

Eventually the group arrives at the correct answer: Mom can make 26 tarts and will have half an apple left over.

- Is the apple-tarts problem developmentally appropriate for Ms. Lombard's students? Why or why not?
- What advantages might there be for making this task a group activity?



As you undoubtedly know from your own experiences as a student, fractions are more difficult to understand and work with than are whole numbers. But Liz, Jeanette, and Kerri rise to the challenge of the apple-tarts problem and, in the process, possibly acquire new mathematical understandings and problem-solving skills. In other words, the task is *developmentally appropriate* for them.

<sup>1</sup>In case your memory of how to divide by a fraction is rusty, you can approach the problem  $20 \div \frac{3}{4}$  by inverting the fraction and multiplying, like so:  $20 \times \frac{4}{3} = \frac{80}{3} = 26\frac{2}{3}$ . In the problem Ms. Lombard presents, Mom can make 26 tarts and have enough apple to make two-thirds of another tart. If Mom has two-thirds of the three-fourths of an apple she needs to make another whole tart, then she has half an apple left over ( $\frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$ ).

## CHAPTER OUTLINE

### General Principles of Human Development

The Multiple Layers of Environmental Influence: Bioecological Systems and the Importance of Culture

### Role of the Brain in Learning and Development

#### Piaget's Theory of Cognitive Development

Piaget's Basic Assumptions  
Piaget's Proposed Stages of Cognitive Development  
Critiquing Piaget's Theory  
Considering Diversity from the Perspective of Piaget's Theory  
Contemporary Extensions and Applications of Piaget's Theory

#### Vygotsky's Theory of Cognitive Development

Vygotsky's Basic Assumptions  
Critiquing Vygotsky's Theory  
Considering Diversity from the Perspective of Vygotsky's Theory  
Contemporary Extensions and Applications of Vygotsky's Theory  
Contrasting Piaget's and Vygotsky's Theories

#### Language Development

Theoretical Issues Regarding Language Development  
Diversity in Language Development  
Second-Language Learning and English Language Learners

Classroom instruction must take into account the physical, cognitive, personal, and social characteristics and abilities that students at a particular age are likely to have. In this chapter we'll look at general principles of development and then zero in on children's **cognitive development**—that is, developmental changes in thinking, reasoning, and language. As we look at these topics in the pages ahead, we'll be better able to answer the preceding questions about Ms. Lombard's apple-tarts activity.

## General Principles of Human Development

Four general principles characterize children's physical, cognitive, personal, and social development.

- *The sequence of development is somewhat predictable.* Researchers have observed many **universals** in development; that is, they've seen similar patterns in how children change over time despite considerable differences in the environments in which the children grow up. Some of this universality is marked by the acquisition of **developmental milestones**—new, developmentally more advanced behaviors—in predictable sequences. For example, children must be able to walk before they can run and jump, and they must be able to count and work with whole numbers before they become capable of using fractions in mathematical problem solving.
- *Children develop at different rates.* Not all children reach particular milestones at the same age: Some reach them earlier, some later. Accordingly, we're apt to see considerable *diversity* in students' developmental accomplishments at any single grade level. As teachers, we should never jump to conclusions about what individual students can and cannot do based on age alone. For example, although Ms. Lombard's apple-tarts problem appears to be developmentally appropriate for some of her students, it might be too advanced for others.
- *Development is often marked by periods of relatively rapid growth (spurts) between periods of slower growth (plateaus).* Development doesn't necessarily proceed at a constant rate. For example, toddlers may speak with a limited vocabulary and one-word "sentences" for several months, yet sometime around their second birthday their vocabulary expands rapidly and their sentences become longer and longer within just a few weeks. And after seemingly stalling out height-wise, many young adolescents undergo an adolescent growth spurt, shooting up several inches within a year or so. Occasionally children even take a temporary step *backward*, apparently because they're in the process of overhauling a particular physical or cognitive skill and are about to make a major leap forward (Gershkoff-Stowe & Thelen, 2004; Morra, Gobbo, Marini, & Sheese, 2008).

Some developmental theorists have suggested that such patterns of uneven growth reflect distinctly different periods, or *stages*, in development; you'll see an example in the discussion of Piaget's theory later in this chapter. Other theorists instead believe that most aspects of development can best be characterized as reflecting general *trends* that can't really be broken into discrete stages. Either way, early developmental advancements almost certainly provide a foundation on which later advancements can build—hence the predictable *this-before-that* nature of many developmental progressions.

- *Heredity and environment interact in their effects on development.* Virtually all aspects of development are influenced either directly or indirectly by a child's genetic makeup. For example, soon after birth children begin to show genetic inclinations, or *temperaments*, that predispose them to respond to physical and social events in certain ways—perhaps to be calm or irritable, outgoing or shy, cheerful or fearful. Not all inherited characteristics appear so early, however. Heredity continues to guide a child's growth through **maturation**—a gradual, genetically driven acquisition of more advanced physical and neurological capabilities over the course of childhood and adolescence. For example, motor skills such as walking, running, and jumping develop primarily as a result of neurological development, increased strength, and increased muscular control—changes that are largely determined by inherited biological "instructions." And genetically driven maturational changes in the brain have a significant impact on children's increasing ability to think and behave effectively and efficiently (more about this point shortly).



Keep in mind that students of any single age show considerable diversity in what they can and cannot do.

Chapter 3 examines temperamental differences in greater depth.

Yet environmental factors also make substantial contributions to development. For example, although height and body build are primarily inherited characteristics, good nutrition and regular physical exercise also make a difference. And although children's behaviors are partly the result of inherited temperaments, the ways in which their environment encourages them to behave are just as influential, sometimes even more so.

Historically, many researchers have sought to determine the degree to which various human characteristics are the result of heredity versus environment—an issue often referred to as *nature versus nurture*. But increasingly psychologists have come to realize that heredity and environment interact in ways we can probably never disentangle (e.g., S. W. Cole, 2009; W. Johnson, 2010; Spencer et al., 2009). First and foremost, genes need environmental support in order to do their work. For instance, a child with “tall” genes can grow tall only if good nutrition supports such growth. Furthermore, some genetically driven maturational processes seem to be characterized by **sensitive periods**—age-related time periods during which certain environmental conditions are especially important for normal development (we'll see examples in the upcoming sections on the brain and language development). In addition, children's inherited characteristics may lead other people to treat them in particular ways. For instance, a physically attractive child will be accepted more readily by peers than a less attractive one, and a temperamentally hyperactive child might be disciplined more harshly than a quieter one. Finally, children can *choose* their environments to some extent, especially as they get older, and they're apt to seek out situations that match their inherited temperaments and abilities.

The last point in the preceding paragraph is important enough to repeat: *Children can choose their environments to some extent*. Children are hardly passive recipients of their environmental legacies. Instead, they actively and intentionally *think about* and *act on* their environments, and in doing so they alter their environments—and the effects of those environments—in significant ways (Mareschal et al., 2007; Nettles, Caughy, & O'Campo, 2008; Nuemi, 2008).

## THE MULTIPLE LAYERS OF ENVIRONMENTAL INFLUENCE: BIOECOLOGICAL SYSTEMS AND THE IMPORTANCE OF CULTURE

As we consider the various ways in which the environment might influence children's development, we must be careful that we don't limit our thinking only to children's immediate surroundings. In fact, as developmental theorist Urie Bronfenbrenner has pointed out in his **bioecological systems theory**, any large society encompasses several “layers” of environment that all have significant impacts on children's development and are, in turn, either directly or indirectly influenced by the other layers and by the children themselves (Bronfenbrenner, 2005; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 1998).

Figure 2.1 depicts the various layers of influence that Bronfenbrenner has proposed. More specifically:

1. The *child* brings certain individual characteristics (e.g., unique temperaments and physiological features) and age-related developmental acquisitions (e.g., cognitive abilities and interpersonal skills) that influence the child's behaviors in any given situation.
2. The child is regularly immersed in certain *microsystems*—certain everyday contexts (e.g., family, school, friendships) that both influence and are influenced by the child's characteristics and behaviors.
3. The microsystems in which a child lives and grows *influence one another* in what Bronfenbrenner has called a *mesosystem*. For example, a temperamentally hyperactive child might initially elicit stringent disciplinary actions at school (one microsystem), but concerned parents (another microsystem) might actively seek out the child's teachers and suggest alternative strategies that can channel the child's behaviors into productive activities.
4. Encompassing the day-to-day contexts in which a child lives, works, and plays is a broader *exosystem*, which includes people and institutions that indirectly affect the child's development through their influences on various microsystems. For example, the nature of parents' employment can affect their ability to provide adequate living quarters, nutrition, and health care for their family, and a good social support network can give parents advice,



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### Content Extension 2.1.

Learn more about children's physical development in “Physical Development Across Childhood and Adolescence.”

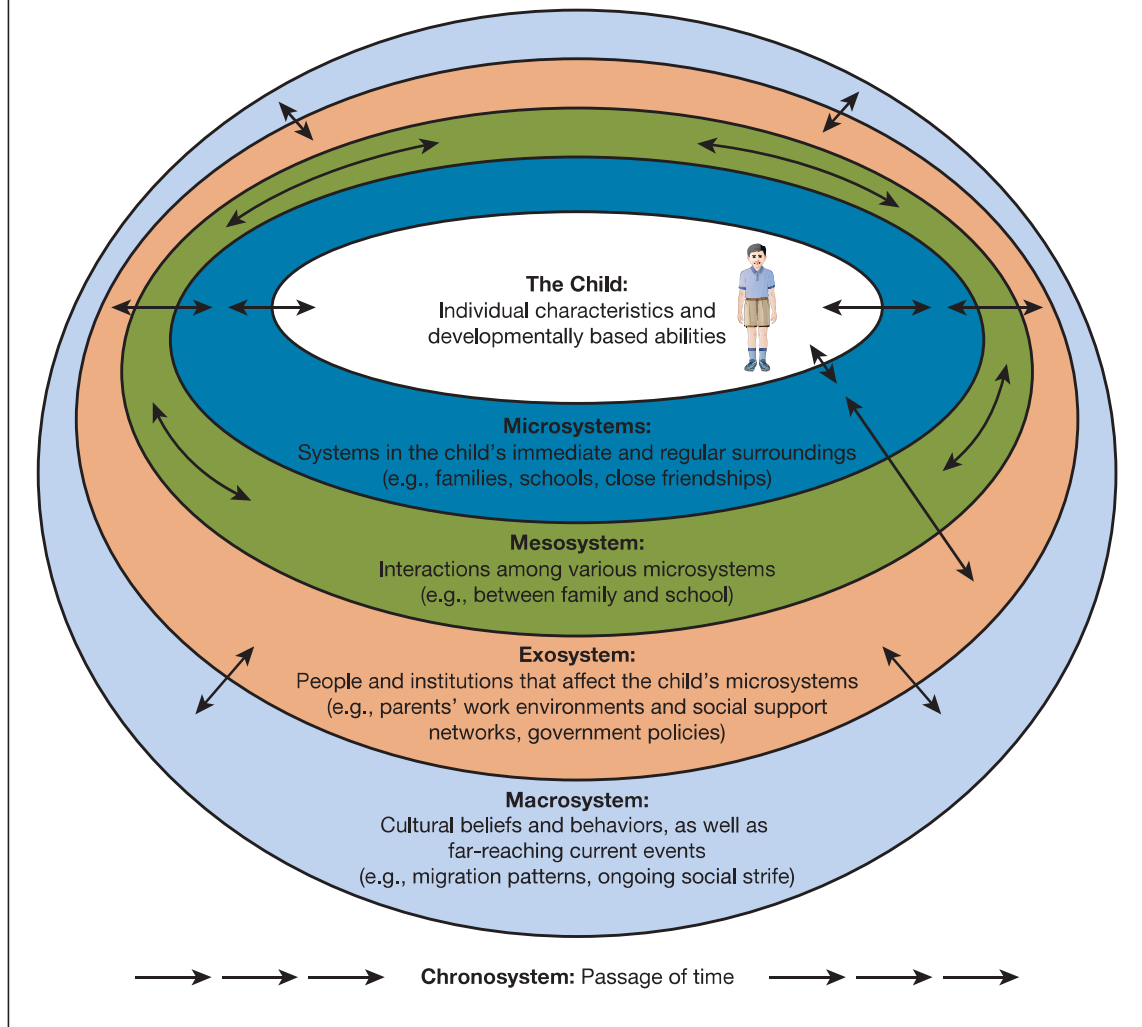


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### Video Example 2.1.

In this video, 16-year-old Josh describes how his early growth spurt and voice change affected his peer relationships in high school. In what specific ways did his maturational changes influence his social environment?

**FIGURE 2.1** In Bronfenbrenner’s bioecological systems perspective, growing children affect and are affected by multiple systems that are nested within one another and change over time.



assistance, and emotional support in challenging circumstances. Meanwhile, local and federal agencies and policies may or may not support teachers and schools in their efforts to nurture children’s cognitive development and social well-being.

5. A child’s exosystem is enmeshed within an even broader *macrosystem*, which includes a society’s general beliefs, ideological perspectives, and behavior patterns, as well as far-reaching current events (e.g., war, migration patterns, ongoing social or political strife).
6. Children and the systems in which they grow up are by no means static entities. Instead, they all change over time—in part because they influence one another—in what Bronfenbrenner has called a *chronosystem* (see the bottom set of arrows in Figure 2.1). For example, teachers’ instructional practices might change as academic researchers report new research findings, government agencies might provide websites that help parents and teachers more effectively foster children’s cognitive development, and society’s general beliefs and practices can change as two or more subgroups regularly interact. In general, children’s environments are *dynamic systems* encompassing mutually influencing variables that are in constant flux (also see C. D. Lee, 2010; Thelen & Smith, 1998).

It has become increasingly clear that a key factor impacting *all* of these systems is a child’s **culture**—the behaviors and belief systems that characterize any long-standing social group of

which the child is a member. Culture is pervasive in many aspects of a child's home environment—for instance, in the behaviors parents and other family members encourage, the disciplinary practices parents use, the books children have access to, the television shows they watch, and so on. Culture influences the broader environmental contexts as well—for instance, by offering certain outlets for leisure time (e.g., basketball courts, Cinco de Mayo festivals) and by advocating or discouraging certain activities (e.g., seeking a college degree, playing video games). Ultimately, culture is an inside-the-head thing as well as an out-there-in-the-world thing: It provides an overall framework by which a child comes to determine what things are normal and abnormal, true and not true, rational and irrational, good and bad (M. Cole, 2006; Shweder et al., 1998).

### MyEdLab Self-Check 2.1

## Role of the Brain in Learning and Development

One key player in children's development is, of course, the brain. The human brain is an incredibly complicated organ that includes several *trillion* cells. About 100 billion of them are nerve cells, or **neurons**, that are microscopic in size and interconnected in countless ways. Some neurons receive information from the rest of the body, others synthesize and interpret that information, and still others send messages that tell the body how to respond to its present circumstances. Accompanying neurons are perhaps 1 to 5 trillion **glial cells**, which serve a variety of specialized functions that enhance the functioning of neurons or in other ways keep the brain going.

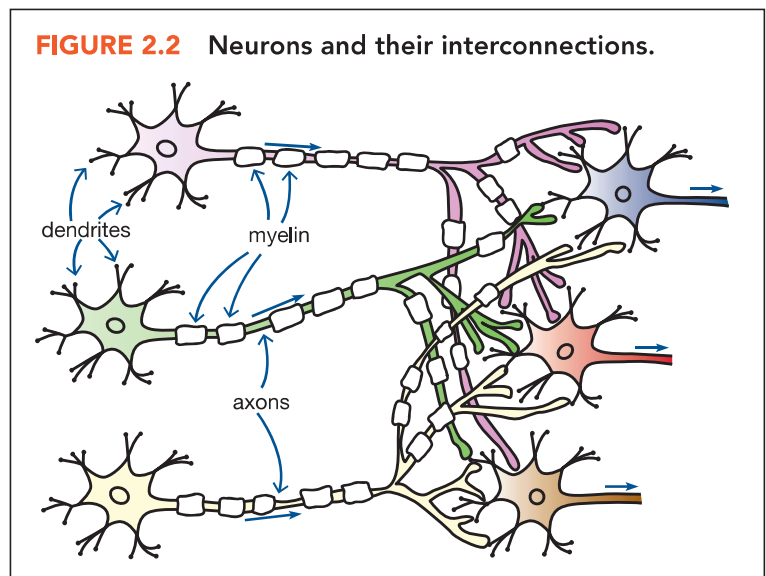
Every neuron has numerous branchlike structures, called *dendrites*, that receive messages from other neurons (see Figure 2.2). Every neuron also has an *axon*, a long, armlike structure that transmits information on to still other neurons. The axon may branch out many times, and the ends of its branches have *terminal buttons* that contain certain chemical substances (more about these substances in a moment). For some (but not all) neurons, much of the axon has a white, fatty coating called a *myelin sheath*.

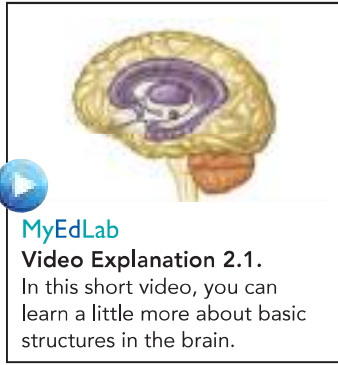
When a neuron's dendrites are stimulated by other neurons—which might also be in the brain or, instead, might extend from other parts of the body—the dendrites become electrically charged. If the total charge reaches a certain level, the neuron fires, sending an electrical impulse along its axon to the terminal buttons. If the axon has a myelin sheath, the impulse travels quite rapidly because it leaps from one gap in the myelin to the next, almost as if it were playing leapfrog. If the axon doesn't have a myelin sheath, the impulse travels more slowly.

Curiously, neurons don't actually touch one another. Instead, they send chemical messages to their neighbors across tiny spaces known as **synapses**. When an electrical impulse moves along a neuron's axon, it signals the terminal buttons to release chemicals known as **neurotransmitters** that travel across the synapses and stimulate neighboring neurons. Any single neuron may have synaptic connections with hundreds or even thousands of other neurons (Goodman & Tessier-Lavigne, 1997; Lichtman, 2001).

With these basics in mind, let's consider four key points about the brain and its role in cognitive development.

- *Different parts of the brain have different specialties, but they all work closely with one another.* Brain structures in the lower and middle parts of the brain specialize in essential physiological processes (e.g., breathing), habitual body movements (e.g., riding a bicycle), and basic perceptual skills (e.g., diverting attention to potentially life-threatening stimuli). Complex, conscious thinking takes place primarily in the **cortex**, which rests on the top and sides of the brain like a thick, lumpy toupee. The part of the cortex located just behind the forehead, known as the *prefrontal cortex*, is largely responsible for a wide variety of





very human activities, including sustained attention, planning, reasoning, decision making, coordination of complex activities, and inhibition of nonproductive thoughts and behaviors. Other areas of the cortex are actively involved in interpreting visual and auditory information, identifying the spatial characteristics of objects and events, and retaining general knowledge about the world.

To some degree, the left and right halves of the cortex—its two *hemispheres*—also have somewhat distinct specialties. For most people, the left hemisphere takes primary responsibility for language and logical thinking, whereas the right hemisphere is more dominant in visual and spatial tasks (Byrnes, 2001; Ornstein, 1997; Siegel, 2012). Yet contrary to a popular belief, people rarely, if ever, think exclusively in one hemisphere. There’s really no such thing as “left-brain” or “right-brain” thinking: The two hemispheres constantly collaborate in day-to-day tasks. In fact, learning or thinking about virtually anything, even a fairly simple idea, tends to be *distributed* across many parts of the brain (Bressler, 2002; Gonsalves & Cohen, 2010; Haxby et al., 2001).

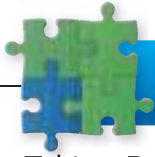
- *Learning and cognitive development involve changes in synapses, neurons, and glial cells.* Much of human learning involves strengthening existing synapses between neurons or else forming new ones. Sometimes, however, making progress actually involves *eliminating* synapses. Effective learning requires not only that people think and do certain things but also that they *not* think and do other things—in other words, that they inhibit tendencies to think or behave in particular ways (C. N. Davidson, 2011; Lichtman, 2001; Merzenich, 2001). In addition, a good deal of learning seems to involve the formation of new neurons or glial cells (Koob, 2009; Spalding et al., 2013).
- *Developmental changes in the brain enable increasingly complex and efficient thought.* Neurons begin to form synapses long before a child is born. But shortly after birth, the rate of synapse formation increases dramatically. Neurons sprout new dendrites in many directions, and so they come into contact with a lot of their neighbors, especially in the first 2 or 3 years of life. Much of this early **synaptogenesis** appears to be driven primarily by genetic programming rather than by learning experiences. Thanks to synaptogenesis, children in the elementary grades have many more synapses than adults do (Bruer, 1999; C. A. Nelson, Thomas, & de Haan, 2006).

As children encounter different stimuli and experiences in their daily lives, some synapses come in quite handy and are used repeatedly. Others are largely useless, and these gradually fade away through another genetically driven process known as **synaptic pruning**, a process that continues throughout the elementary and secondary school years and into adulthood. Most synaptic pruning is a *good* thing—not a bad one—because it eliminates “nuisance” synapses that are inconsistent with typical environmental events and appropriate responses. Synaptic pruning, then, may be Mother Nature’s way of making the brain more efficient (Bruer & Greenough, 2001; Bryck & Fisher, 2012; Huttenlocher & Dabholkar, 1997).

Another important developmental process in the brain is **myelination**. When neurons first develop, their axons have no myelin sheath. As they acquire this myelin over time, they fire much more quickly, greatly enhancing the brain’s overall efficiency. Myelination continues throughout childhood, adolescence, and early adulthood, especially in the cortex (Giedd et al., 2012; Merzenich, 2001; Paus et al., 1999).

In addition, the onset of puberty is marked by significant changes in hormone levels, which affect the continuing maturation of brain structures and possibly also affect the production and effectiveness of neurotransmitters (Kolb, Gibb, & Robinson, 2003; Shen et al., 2010; E. F. Walker, 2002). Such changes can have an impact on adolescents’ functioning in a variety of areas, including attention, planning, and impulse control. To some degree, adolescents’ abilities to learn and respond appropriately may temporarily *decrease* until brain functioning restabilizes (McGivern, Andersen, Byrd, Mutter, & Reilly, 2002; Shen et al., 2010; Steinberg, 2009).



- *The brain remains adaptable throughout life.* Some aspects of cognitive development appear to have sensitive periods in which certain kinds of environmental stimulation are crucial. For example, if infants don’t have normal exposure to patterns of light (e.g., if congenital cataracts make them functionally blind), they may soon lose the ability to see normally. And if children don’t hear spoken language in the first few years of life, they’re apt to have trouble mastering some of its complexities once they *do* begin to hear it (more about this point later




## Applying Brain Research

### Taking Developmental Changes in the Brain into Account

Be careful—many recently published books and articles about “using brain research” and “brain-based learning” either misrepresent or misapply researchers’ findings about brain development. The following three recommendations are consistent with current knowledge about the brain and how it changes with age.

-  **Provide reasonable stimulation for young children; don't overload them with new information and activities for fear of their “losing synapses.”** Some well-meaning educators have proposed that the proliferation of new synapses in the preschool and early elementary years points to a sensitive period in brain development. Accordingly, they urge us to maximize children’s educational experiences—providing reading instruction, violin lessons, art classes, and the like—during this time period. Before you, too, jump to such a conclusion, consider this point: Although adequate nutrition and everyday forms of stimulation are critical for normal brain development, there is *no* evidence that jam-packed, information- and skills-intensive experiences in the early years enhance brain power over the long run (Bruer, 1999; R. A. Thompson & Nelson, 2001).
-  **Keep in mind that adolescents' brains have not yet fully matured.** Synaptic pruning and myelination—two developmental

processes that enhance the brain’s efficiency—continue throughout adolescence and beyond. Adolescents’ brains are *not* adult brains, especially in the prefrontal cortex—that part of the brain that controls sustained attention, planning, reasoning, impulse control, and other abilities so important for independent learning and responsible behavior (Reyna, Chapman, Dougherty, & Confrey, 2012; Steinberg, 2009). Thus, many middle school and high school students need considerable structure and guidance in order to get and keep them on the road to academic success.

-  **Be optimistic that students of all ages can acquire a wide variety of new topics and skills.** For some content areas—for instance, in music and foreign languages—instruction in the preschool or early elementary years appears to mold the brain somewhat differently than does instruction in the later school years (K. L. Hyde et al., 2009; P. K. Kuhl et al., 2005). Furthermore, children of differing ages have differing levels of prior knowledge and experience on which to draw as they work to acquire new information and skills. But ultimately we must keep in mind the *plasticity* of the human brain: With reasonable effort, practice, and support, human learners of any age can master a great many things.

in the chapter). However, seeing patterned light and hearing spoken language are *normal* experiences, not exceptional ones. There is *no* evidence to indicate that sensitive periods exist for traditional academic subjects such as reading and mathematics.

From a physiological standpoint, the brain’s ability to reorganize itself in order to adapt to changing circumstances—that is, its **plasticity**—persists throughout the life span (Chein & Schneider, 2012; Kolb et al., 2003; C. A. Nelson et al., 2006). The early years are important for development, to be sure, but so are the later years. For most topics and skills, there isn’t a single “best” or “only” time to learn (Bruer, 1999; Byrnes & Fox, 1998; Geary, 1998, 2008). The human brain never goes into lockdown mode.

As researchers gradually pin down how the brain works and develops, they’re also beginning to get clues about how we can best foster children’s and adolescents’ cognitive development; three research-based recommendations are presented in the Applying Brain Research feature “Taking Developmental Changes in the Brain into Account.” Even so, current knowledge of brain physiology doesn’t yield many specifics about how best to foster students’ learning and cognitive development (Byrnes, 2007; G. A. Miller, 2010; Varma, McCandliss, & Schwartz, 2008). By and large, if we want to understand the nature of human learning and cognitive development, we must look primarily at what psychologists, rather than neurologists, have discovered. Two early theories—those of Jean Piaget and Lev Vygotsky—have been especially influential in molding contemporary views of how children learn and develop.

#### MyEdLab Self-Check 2.2

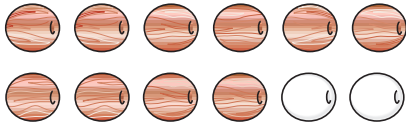
**MyEdLab Application Exercise 2.1.** In this exercise, see if you can detect common teacher and parent misconceptions about how the brain develops.

## Piaget's Theory of Cognitive Development

Do you think of yourself as a logical person? Just how logical *are* you? Try out your logical reasoning abilities in the following exercise.

**EXPERIENCING FIRSTHAND****BEADS, BEINGS, AND BASKETBALLS**

Take a moment to solve the following three problems:



1. In the margin are 12 wooden beads, 10 brown ones and 2 white ones. Are there more brown beads or more wooden beads?
2. If all children are human beings,  
And if all human beings are mammals,  
Then must all children be mammals?
3. If all children are basketballs,  
And if all basketballs are jellybeans,  
Then must all children be jellybeans?

You undoubtedly found the first problem quite easy; there are, of course, more wooden beads than brown beads. And when you read the second problem, you probably concluded fairly quickly that, yes, all children must be mammals. The third problem is a bit tricky: It follows the same line of reasoning as the second, but the logical conclusion—all children must be jellybeans—contradicts what is true in reality.

In the early 1920s the Swiss biologist Jean Piaget began studying children's responses to problems of this nature. He used an approach he called the **clinical method**, in which an adult presents a task or problem and asks a child a series of questions about it, tailoring later questions to the child's responses to previous ones. For example, let's look at what happened when a researcher in Piaget's laboratory presented the wooden beads problem to a 6-year-old, whom we'll call Brian:<sup>2</sup>

*Adult:* Are there more wooden beads or more brown beads?

*Brian:* More brown ones, because there are two white ones.

*Adult:* Are the white ones made of wood?

*Brian:* Yes.

*Adult:* And the brown ones?

*Brian:* Yes.

*Adult:* Then are there more brown ones or more wooden ones?

*Brian:* More brown ones. (dialogue from Piaget, 1952a, pp. 163–164)

During further questioning, Brian continued to assert that the brown beads outnumbered the wooden beads. In an effort to help him see otherwise, the adult asked him to draw two necklaces, one made of the brown beads and another made of the wooden beads. Brian drew a series of black rings for the brown-beads necklace; he drew a series of black rings plus two white rings for the wooden-beads necklace.

*Adult:* Good. Now which will be longer, the one with the brown beads or the one with the wooden beads?

*Brian:* The one with the brown beads. (dialogue from Piaget, 1952a, p. 164)

Piaget suggested that young children such as Brian have trouble with **class inclusion** tasks in which they must think of an object as simultaneously belonging to a category and to one of its subcategories—in this case, thinking of a bead as being both *brown* and *wooden* at the same time. Piaget found that many 4- and 5-year-olds have difficulty with class inclusion tasks such as the beads problem but that 7- and 8-year-olds almost always respond to such tasks correctly. He found, too, that 10-year-olds have an easier time with logic problems that involve real-world

<sup>2</sup>Piaget used abbreviations to identify specific children in his studies. In this case he used the letters *BRI*, but we've given the child a name to allow for easier discussion.



phenomena (such as categories and subcategories of living creatures) than with problems involving hypothetical and contrary-to-fact ideas (such as jellybean children), whereas many adolescents can effectively deal with both kinds of problems.

Through a wide variety of thought-provoking questions and tasks, Piaget and his research colleagues discovered a great deal about what and how children think about the world around them (e.g., Inhelder & Piaget, 1958; Piaget, 1929, 1952b, 1959, 1970, 1980). Piaget integrated his findings into a theory of cognitive development that has made major contributions to contemporary understandings of children's learning and development.

## PIAGET'S BASIC ASSUMPTIONS

Piaget introduced a number of ideas and concepts to describe and explain the changes in logical thinking he observed in children and adolescents.

- *Children are active and motivated learners.* Piaget believed that children are naturally curious about their world and actively seek out information to help them make sense of it. They continually experiment with the objects they encounter, manipulating them and observing the effects of their actions.
- *Children construct rather than absorb knowledge.* In their day-to-day experiences, children don't just passively soak up a collection of isolated facts. Instead, they pull their experiences together into an integrated view of how the world operates. For example, by observing that objects always fall down (never up) when released, children begin to construct a basic understanding of gravity. As they interact with family pets, visit farms and zoos, and look at picture books, they develop more complex understandings of animals. Because Piaget proposed that children construct their own beliefs and understandings from their experiences, his theory is sometimes called a *constructivist* theory or, more generally, **constructivism**.

In Piaget's terminology, the things children do and know are organized as **schemes**—groups of similar actions or thoughts that are used repeatedly in response to the environment. Initially, children's schemes are largely behavioral in nature, but over time they become increasingly mental and, eventually, abstract. For example, an infant may have a putting-things-in-mouth scheme that she applies to a variety of objects, including her thumb, cookies, and toys. A 7-year-old may have a scheme for identifying snakes that includes their long, thin bodies, lack of legs, and slithery nature. A 13-year-old may have a scheme for what constitutes *fashion*, allowing him to classify certain peers as being either really cool or “total losers.”

Over time, children's schemes are modified with experience, and many become integrated with one another. For instance, children begin to take hierarchical interrelationships into account: They learn that poodles, cocker spaniels, and German shepherds are all dogs; that dogs, snakes, and birds are all animals; and that both animals and plants are living creatures. A progressively more organized body of knowledge and thought processes allows children to think in increasingly complex and logical ways.

- *Children continually learn new things through two complementary processes: assimilation and accommodation.* **Assimilation** involves responding to or thinking about an object or event in a way that's consistent with an existing scheme. For example, an infant may assimilate a new teddy bear into her putting-things-in-mouth scheme. A 7-year-old may quickly identify a new slithery creature in the garden as a snake. A 13-year-old may readily label a classmate's apparel or hairstyle as being either quite fashionable or “soooo yesterday.”

But sometimes children can't easily interpret and respond to a new object or event using existing schemes. In these situations one of two forms of **accommodation** occurs: Children either (1) modify an existing scheme to account for the new object or event or (2) form a new scheme to deal with it. For example, an infant may have to open her mouth wider than usual to accommodate a teddy bear's fat paw. A 13-year-old may have to revise his existing scheme of fashion according to changes in what's hot and what's not. A 7-year-old who encounters a long, slithery creature with four legs can't apply the *snake* scheme (snakes don't have legs) and thus, after some research, may acquire a new scheme—*salamander*.

Assimilation and accommodation typically work hand in hand as children develop their knowledge and understanding of the world. Children interpret each new event within the



MyEdLab

### Video Example 2.2.

Young children are naturally curious about things in their environment. In what ways does 2-year-old Maddie explore the properties of her new toy?



When introducing a new concept or procedure, show students how it relates to something they already know.



Occasionally induce disequilibrium by presenting puzzling phenomena that students cannot easily explain using their existing understandings.

context of their existing knowledge (assimilation) but at the same time may modify their knowledge as a result of the new event (accommodation). Accommodation rarely happens without assimilation: Children can benefit from, or accommodate to, new experiences only when they can relate those experiences to their current knowledge and beliefs.

- *Interactions with one's physical and social environments are essential for cognitive development.* According to Piaget, active experimentation with the physical world is critical for cognitive growth. By exploring and manipulating physical objects—for instance, fiddling with sand and water, playing games with balls and bats, and conducting science experiments—children see the effects of erosion, discover principles related to force and gravity, and so on.

In Piaget's view, interaction with other people is equally important. Frequent social interactions—both pleasant (e.g., conversations) and unpleasant (e.g., conflicts about sharing and fair play)—help young children come to realize that different people see things differently and that their own view of the world isn't necessarily completely accurate or logical. And as children get older, discussions and disagreements about complex issues and problems—for instance, the apple-tarts problem in the opening case study—can help them recognize and reexamine inconsistencies in their own reasoning.

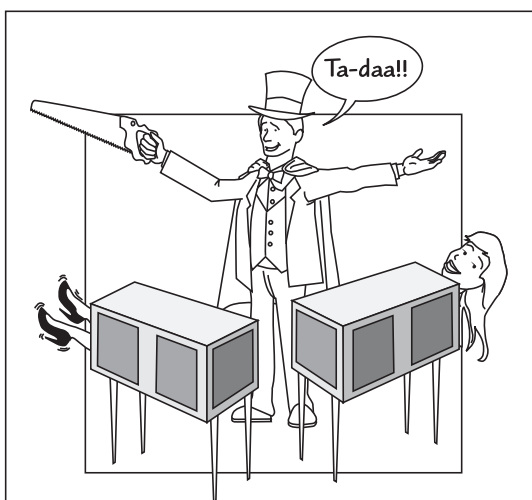
- *A process of equilibration promotes progression toward increasingly complex thought.* Piaget suggested that children are often in a state of **equilibrium**: They can comfortably interpret and respond to new events using existing schemes. But as children grow older and expand their horizons, they sometimes encounter situations for which their current knowledge and skills are inadequate. Such situations create **disequilibrium**, a sort of mental discomfort that spurs them to try to make sense of what they're observing. By replacing, reorganizing, or better integrating certain schemes (i.e., through accommodation), children can better understand and address previously puzzling events. The process of moving from equilibrium to disequilibrium and back to equilibrium again is known as **equilibration**. In Piaget's view, equilibration and children's intrinsic desire to achieve equilibrium promote the development of more complex levels of thought and knowledge.

As an example, let's return to Brian's responses to the beads problem. Recall that the adult asked Brian to draw two necklaces, one made with the brown beads and one made with the wooden beads. The adult presumably hoped that after Brian drew a brown-and-white necklace that was longer than an all-brown necklace, he would notice that his drawings were inconsistent with his statement that there were more brown beads. The inconsistency might have led Brian to experience disequilibrium, perhaps to the point where he would revise his conclusion. In this case, however, Brian was apparently oblivious to the inconsistency, remained in equilibrium, and thus had no need to revise his thinking.

- *In part as a result of maturational changes in the brain, children think in qualitatively different ways at different ages.* Long before researchers knew much about how the brain changes with age, Piaget speculated that it *does* change in significant ways and that such changes enable more complex thought processes. He suggested that major neurological changes take place when children are about 2 years old, again when they're 6 or 7, and yet again around puberty. Changes at each of these times allow new abilities to emerge, such that children progress through a sequence of stages that reflect increasingly sophisticated thought. As you've already learned, the brain does, in fact, continue to develop throughout childhood and adolescence, but whether some of its changes enable the cognitive advancements Piaget described is still an open question.

## PIAGET'S PROPOSED STAGES OF COGNITIVE DEVELOPMENT

Piaget proposed that as a result of brain maturation, innumerable experiences in children's physical and social environments, and children's natural desire to make sense of and adapt to their world, cognitive development proceeds through four distinct stages, with the last three being constructed from children's accomplishments in preceding stages (e.g., Piaget, 1971). Thus, the stages are



An event that contradicts what we currently know and believe about the world creates **disequilibrium**—a feeling of discomfort that motivates us to try to resolve the contradiction in some way.

*hierarchical*—each stage provides a foundation for any subsequent ones—and so children progress through them in a particular order.

Table 2.1 summarizes Piaget's proposed stages and presents examples of abilities acquired during each one. As you look at the table, please keep three things in mind. First, some children are apt to be in *transition* from one stage to the next, displaying characteristics of two adjacent stages at the same time. Second, as children gain abilities associated with more advanced stages, they don't necessarily leave behind the characteristics they acquired in previous stages. Finally, many developmental theorists suggest—and Piaget himself acknowledged—that the four stages better describe how children and adolescents *can* think, rather than how they always *do* think, at any particular age (Flavell, 1994; Halford & Andrews, 2006; Klaczynski, 2001; Tanner & Inhelder, 1960).

## COMPARE/CONTRAST

STAGE	PROPOSED AGE RANGE <sup>a</sup>	GENERAL DESCRIPTION	EXAMPLES OF ABILITIES ACQUIRED
<b>Sensorimotor Stage</b>	Begins at birth	Schemes are based largely on behaviors and perceptions. Especially in the early part of this stage, children cannot think about things that are not immediately in front of them, and so they focus on what they are doing and seeing at the moment.	<ul style="list-style-type: none"> <li>• <b>Trial-and-error experimentation with physical objects:</b> Exploration and manipulation of objects to determine their properties</li> <li>• <b>Object permanence:</b> Realization that objects continue to exist even when removed from view</li> <li>• <b>Symbolic thought:</b> Representation of physical objects and events as mental entities (<i>symbols</i>)</li> </ul>
<b>Preoperational Stage</b>	Emerges at about age 2	Thanks in part to their rapidly developing symbolic thinking abilities, children can now think and talk about things beyond their immediate experience. However, they do not yet reason in logical, adultlike ways.	<ul style="list-style-type: none"> <li>• <b>Language:</b> Rapid expansion of vocabulary and grammatical structures</li> <li>• <b>Extensive pretend play:</b> Enactment of imaginary scenarios with plots and assigned roles (e.g., mommy, doctor, Superman)</li> <li>• <b>Intuitive thought:</b> Some logical thinking (especially after age 4), but based primarily on hunches and intuition rather than on conscious awareness of logical principles</li> </ul>
<b>Concrete Operations Stage</b>	Emerges at about age 6 or 7	Adultlike logic appears but is limited to reasoning about concrete, real-life situations.	<ul style="list-style-type: none"> <li>• <b>Distinction between one's own and others' perspectives:</b> Recognition that one's own thoughts and feelings may be different from those of others and do not necessarily reflect reality</li> <li>• <b>Class inclusion:</b> Ability to classify objects as belonging to two or more categories simultaneously</li> <li>• <b>Conservation:</b> Realization that amount stays the same if nothing is added or taken away, regardless of alterations in shape or arrangement</li> </ul>
<b>Formal Operations Stage</b>	Emerges at about age 11 or 12 <sup>b</sup>	Logical reasoning processes are applied to abstract ideas as well as to concrete objects and situations. Many capabilities essential for advanced reasoning in science and mathematics appear.	<ul style="list-style-type: none"> <li>• <b>Logical reasoning about abstract, hypothetical, and contrary-to-fact ideas:</b> Ability to draw logical deductions about situations that have no basis in physical reality</li> <li>• <b>Proportional reasoning:</b> Conceptual understanding of fractions, percentages, decimals, and ratios</li> <li>• <b>Formulation of multiple hypotheses:</b> Ability to identify two or more competing hypotheses about possible cause-and-effect relationships</li> <li>• <b>Separation and control of variables:</b> Ability to test hypotheses by manipulating one variable while holding other relevant variables constant</li> <li>• <b>Idealism:</b> Ability to envision alternatives to current social and political practices, sometimes with little regard for what is realistically possible under existing circumstances</li> </ul>

<sup>a</sup>The age ranges presented in the table are averages; some children reach more advanced stages a bit earlier, others a bit later. Also, some children may be in *transition* from one stage to the next, displaying characteristics of two adjacent stages at the same time.

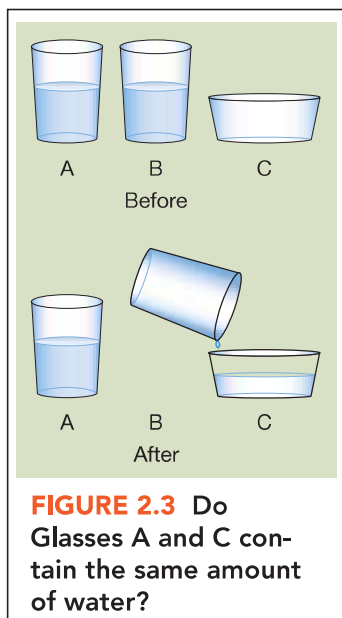
<sup>b</sup>Researchers have found considerable variability in when adolescents begin to show reasoning processes consistent with Piaget's formal operations stage. Furthermore, not all cultures value or nurture formal operational logic, perhaps because it is largely irrelevant to people's daily lives and tasks in those cultural groups.

The preoperational, concrete operations, and formal operations stages all occur during the school years, and so we'll look at these three stages more closely.

### PREOPERATIONAL STAGE (AGE 2 THROUGH AGE 6 OR 7)

In the early part of the **preoperational stage**, children's language skills virtually explode, and the many words in their rapidly increasing vocabularies serve as *symbols* that enable them to mentally represent and think about a wide variety of objects and events. However, preoperational thought has some definite limitations, especially when compared to the concrete operational thinking that emerges later. For example, Piaget described young children as exhibiting **preoperational egocentrism**: They don't yet have sufficient reasoning abilities to look at a situation as someone else might look at it. Thus, preschoolers might play games together without checking to be sure they're all playing by the same rules, and they may tell stories in which they leave out details that are critical for listeners' understanding.

Young children's thinking also tends to be somewhat illogical at times, at least from an adult's point of view. We've already seen how young children have difficulty with class inclusion problems (recall Brian's insistence that the brown beads outnumber the wooden ones). In addition, they're apt to have trouble with **conservation**: They fail to realize that if nothing is added or taken away, the amount of a substance or set of objects must stay the same regardless of changes in the shape or arrangement of items. As illustrations, consider what happens when we present two conservation tasks to 5-year-old Nathan:



*Conservation of liquid:* We show Nathan the three glasses in Figure 2.3. We ask him whether Glasses A and B contain the same amount of water, and he replies confidently that they do. We then pour the water from Glass B into Glass C and ask him whether A and C have the same amount. Nathan replies, “No, that glass [pointing to Glass A] has more because it's taller.”

*Conservation of number:* We next show Nathan two rows of seven pennies each, like so:



Nathan counts the pennies in each row and agrees that the two rows have the same amount. We spread the second row out, and the pennies now look like this:



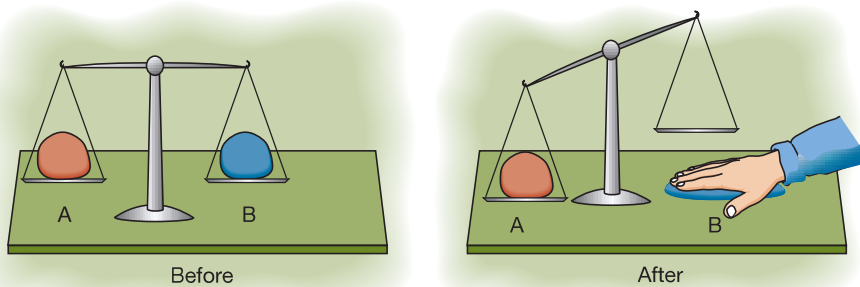
When we ask Nathan whether the two rows still have the same number, he replies, “No, this one [pointing to the bottom row] has more because it's longer.”

As children approach the later part of the preoperational stage, perhaps at around age 4 or 5, they show early signs of adultlike logic. For example, they sometimes draw correct conclusions about class inclusion and conservation problems. But they base their reasoning on hunches and intuition rather than on any conscious awareness of underlying logical principles, and thus they can't yet explain *why* their conclusions are correct.

### CONCRETE OPERATIONS STAGE (AGE 6 OR 7 THROUGH AGE 11 OR 12)

Piaget proposed that as children enter the **concrete operations stage**, their thought processes become organized into larger systems of mental processes—*operations*—that allow them to think more logically than they have previously. They now realize that their own perspectives and feelings aren't necessarily shared by others and may reflect personal opinions rather than reality. They also exhibit such logical reasoning abilities as class inclusion and conservation. For example, they should readily conclude, as you presumably did in an earlier Experiencing Firsthand exercise, that in a group of brown and white wooden beads, there obviously must be more wooden beads than brown ones.

**FIGURE 2.4** Conservation of weight: Ball A and Ball B initially weigh the same. When Ball B is flattened into a pancake shape, how does its weight now compare with that of Ball A?



Children continue to refine their newly acquired logical thinking capabilities for several years. For instance, some forms of conservation, such as conservation of liquid and conservation of number, appear at age 6 or 7, whereas other forms emerge later. Consider the problem in Figure 2.4. Using a balance scale, an adult shows a child that two balls of clay have the same weight. One ball is removed from the scale and smashed into a pancake shape. Does the pancake weigh the same as the unsmashed ball, or are the weights different? Children typically don't achieve conservation of weight—they don't realize that the flattened pancake weighs the same as the round ball it was earlier—until about age 9 (Morra et al., 2008).

Although students displaying concrete operational thought show many signs of logical thinking, their cognitive development isn't yet complete. For example, they have trouble understanding abstract ideas, and they may struggle with problems involving fractions and other proportions, as Liz, Jeanette, and Kerri do in the opening case study.

### FORMAL OPERATIONS STAGE (AGE 11 OR 12 THROUGH ADULTHOOD)

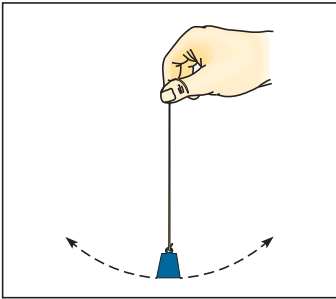
Once children acquire abilities characterizing Piaget's **formal operations stage**, they can think about concepts that have little or no basis in concrete reality—for instance, abstract concepts, hypothetical ideas, and contrary-to-fact statements. Thus, they begin to find underlying meanings in proverbs such as *A rolling stone gathers no moss* and *Don't put the cart before the horse*. They can also recognize that what is logically valid might be different from what is true in the real world. For example, recall the earlier children-basketballs-jellybeans problem: *If* all children are basketballs and *if* all basketballs are jellybeans, then formal operational thinkers can logically conclude that all children must be jellybeans, even though in the real world children *aren't* jellybeans.

From Piaget's perspective, students' mathematical abilities are likely to improve when formal operational thinking develops. Abstract math problems, such as word problems, should become easier to solve. And students should become capable of understanding such concepts as *negative number*, *pi* ( $\pi$ ), and *infinity*—for instance, they should now comprehend how temperature can be below zero and how two parallel lines will never touch even if they go on forever. In addition, because students can now understand proportions (see Table 2.1), they can more easily use fractions, decimals, and ratios when solving problems.

Scientific reasoning is also likely to improve when students are capable of formal operational thought. Three of the formal operational abilities listed in Table 2.1—reasoning logically about hypothetical ideas, formulating multiple hypotheses, and separating and controlling variables—together allow many adolescents to use the *scientific method*, in which they test several possible explanations for an observed phenomenon in a systematic manner. As an example, consider the pendulum problem in the following exercise.

**EXPERIENCING FIRSTHAND**

**PENDULUM PROBLEM**



In the absence of other forces, an object suspended by a rope or string—a pendulum—swings at a constant rate. (A yo-yo and a playground swing are two everyday examples.) Some pendulums swing back and forth rather slowly; others move more quickly. What characteristics of a pendulum determine how quickly it swings? Jot down at least three hypotheses about the variable(s) that might affect a pendulum’s oscillation rate.

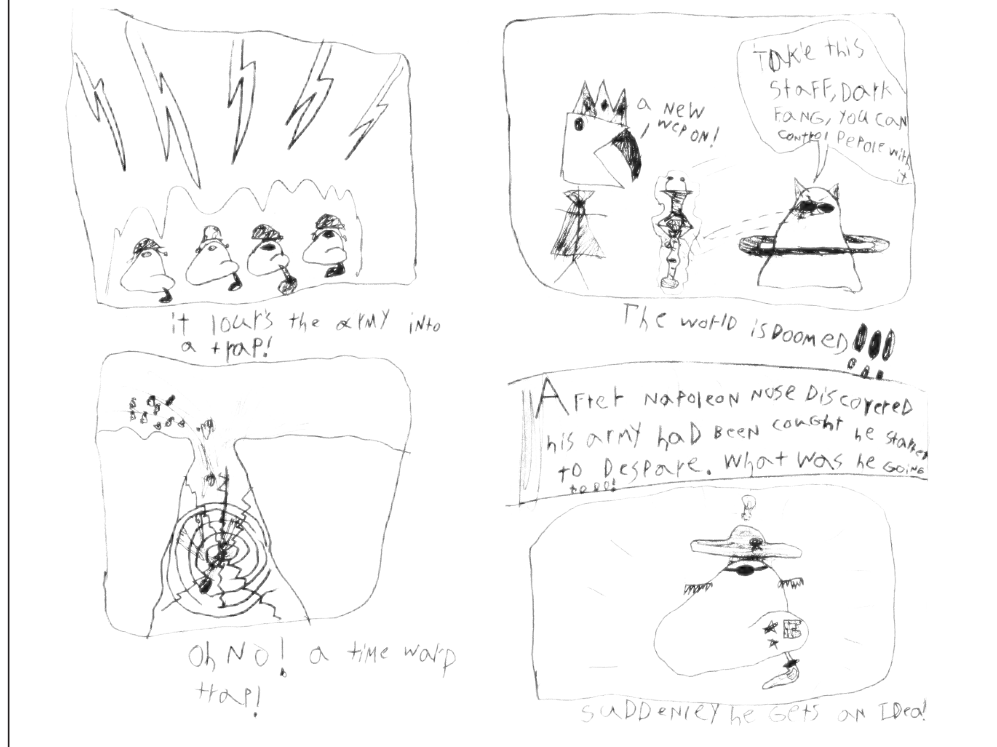
Now gather several small objects of varying weights (e.g., a paper clip, a house key, a heavy bolt) and a piece of string. Tie one of the objects to one end of the string, and set your pendulum in motion. Conduct one or more experiments to test each of your hypotheses.

What can you conclude? What variable or variables affect the rate at which a pendulum swings?

What hypotheses did you generate? Four common ones involve weight of the object, length of the string, force with which the object is pushed, and height from which the object is released. Did you test each of your hypotheses in a systematic fashion? That is, did you *separate and control variables*, testing one at a time while holding all others constant? For example, if you were testing the hypothesis that weight makes a difference, you might have tried objects of different weights while keeping constant the length of the string, the force with which you pushed each object, and the height from which you released or pushed each one. Similarly, if you hypothesized that length was a critical factor, you might have varied the string length while continuing to use the same object and setting the pendulum in motion in a consistent manner. If you carefully separated and controlled each variable, you should have come to the correct conclusion: Only *length* affects a pendulum’s oscillation rate.

An additional outcome of abstract and hypothetical thinking is the ability to envision how the world might be different from the way it actually is (e.g., see Figure 2.5). In some cases

**FIGURE 2.5** In this excerpt from a comic book he has created, 12-year-old Zach shows an ability to think about contrary-to-fact ideas, such as an army of noses (led by Napoleon Nose), a time-warp trap, and villain Dark Fang’s evil new weapon.



adolescents envision a world that is *better* than the one they live in, and they exhibit considerable concern and idealism about social and political issues. Some secondary school students devote a great deal of energy to local or global problems, such as water pollution and animal rights. However, they may offer recommendations for change that seem logical but aren't practical in today's world. For example, a teenager might argue that racism could disappear overnight if people would just begin to "love one another," or that their country should eliminate its armed forces and weaponry as a way of moving toward world peace. Piaget proposed that adolescent idealism reflects **formal operational egocentrism**, an inability to separate one's own logical abstractions from the perspectives of others and from practical considerations. Only through experience do adolescents eventually begin to temper their optimism with some realism about what is possible in a given time frame and with limited resources.

## CRITIQUING PIAGET'S THEORY

Perhaps Piaget's greatest contribution to our understanding of cognitive development was the nature of the *questions* he asked and tried to answer about how children think and reason. In addition, some of his key ideas have stood the test of time, including his ideas that children construct their own knowledge about the world, that they must relate new experiences to what they already know, and that encountering puzzling phenomena can sometimes spur them to revise their understandings.

Piaget's descriptions of processes that *propel* development—especially assimilation, accommodation, and equilibration—can be frustratingly vague, however (M. Chapman, 1988; diSessa, 2006; Klahr, 2001). And interaction with one's physical environment, although certainly valuable, may be less critical than Piaget believed. For instance, children with significant physical disabilities, who can't actively experiment with physical objects, learn a great deal about the world simply by observing what happens around them (Bebko, Burke, Craven, & Sarlo, 1992; Brainerd, 2003).

## A SECOND LOOK AT PIAGET'S STAGES

Piaget's proposal that cognitive development progresses in stages has sparked a great deal of follow-up research. In general, this research supports Piaget's proposed *sequence* in which different abilities emerge but not necessarily the *ages* at which they emerge. Piaget probably underestimated the thinking capabilities of preschoolers and elementary school students. For example, under some circumstances preschoolers are capable of class inclusion and conservation, and they have some ability to comprehend abstract and contrary-to-fact ideas (S. R. Beck, Robinson, Carroll, & Apperly, 2006; Goswami & Pauen, 2005; McNeil & Uttal, 2009; Rosser, 1994). Many first and second graders can understand and use simple proportions (e.g.,  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ) if they can relate the proportions to everyday objects and situations (Empson, 1999; Van Dooren, De Bock, Hessels, Janssens, & Verschaffel, 2005). And some older elementary school children can separate and control variables if a task is simplified in some way (Lorch et al., 2010; Metz, 1995; Ruffman, Perner, Olson, & Doherty, 1993).

Yet Piaget seems to have *overestimated* what adolescents can do. Formal operational thinking processes emerge more gradually than he suggested, and even high school students and adults don't necessarily use them regularly (Flieller, 1999; Kuhn & Franklin, 2006; Morra et al., 2008; Tournaire & Pulos, 1985). Many adolescents seem to better understand abstract ideas when those ideas are accompanied by concrete examples and materials (Blair & Schwartz, 2012; Kaminski & Sloutsky, 2012). Furthermore, students may demonstrate formal operational thought in one content domain while thinking concretely in another (Lovell, 1979; Tamburrini, 1982).

Explicit training and other structured experiences can sometimes help children acquire reasoning abilities sooner than Piaget thought was possible (Brainerd, 2003; Kuhn, 2006). For example, children as young as age 4 or 5 begin to show conservation after having experience with conservation tasks, especially if they can actively manipulate the task materials and discuss their reasoning with someone who already exhibits conservation (Halford & Andrews, 2006; Siegler & Chen, 2008; Siegler & Lin, 2010). Similarly, instruction with concrete or graphic materials can help children and adolescents better understand how to work with fractions and other proportions (Fujimura, 2001; Jitendra, Star, Rodrigues, Lindell, & Someki, 2011; Sarama & Clements, 2009). And in the upper elementary grades, children become increasingly able to separate and control variables when they have many experiences that require them to do so, and they can more easily solve logical problems involving hypothetical ideas if they're taught



Encourage adolescents to discuss their visions for a better world, but point out instances when their ideals are unrealistic.



Even in the high school grades, accompany abstract ideas with concrete examples and experiences.



### MyEdLab Video Example 2.3.

In what specific ways does this fourth-grade teacher use concrete materials to help his students understand how to add fractions with different denominators?

relevant problem-solving strategies (Kuhn & Pease, 2008; S. Lee, 1985; Lorch et al., 2014; Schauble, 1990).

In light of such evidence, most researchers believe that the logical thinking abilities Piaget described emerge in gradual, trend-like ways rather than in discrete stages. Nevertheless, as you'll see shortly, some theorists have offered stage-based theories that might account for children's logical reasoning in specific skill areas or content domains.

## CONSIDERING DIVERSITY FROM THE PERSPECTIVE OF PIAGET'S THEORY

As a researcher working in Switzerland, Piaget conducted his studies with a particular population: Swiss children. However, the course of cognitive development appears to vary somewhat from one cultural group to another, probably because different cultures provide somewhat different experiences. For example, Mexican children who have had considerable experience in hand-weaving complex

flower, animal, and geometric designs show preoperational and concrete operational abilities in new weaving problems sooner than do their same-age counterparts in the United States; the difference remains even if the U.S. children are given explicit training in the Mexican weaving techniques (Maynard & Greenfield, 2003). And Mexican children whose families make pottery for a living acquire conservation skills earlier than their peers in other Mexican families, probably because making pottery requires children to make frequent judgments about needed quantities of clay regardless of the clay's shape (Price-Williams, Gordon, & Ramirez, 1969).

Formal operational reasoning skills—for example, reasoning about hypothetical ideas and separating and controlling variables—also vary from culture to culture (Flieller, 1999; Norenzayan, Choi, & Peng, 2007; Rogoff, 2003). Mainstream Western culture actively nurtures these skills through formal instruction in such academic content domains as science, mathematics, literature, and social studies. In some other cultures, however, such skills may have little relevance to people's daily

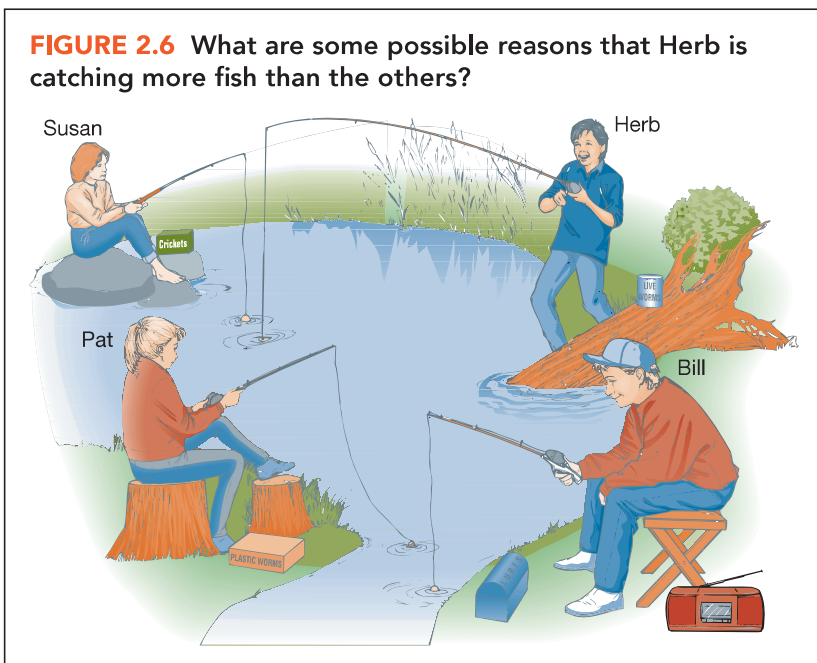
lives (M. Cole, 1990; J. G. Miller, 1997; Norenzayan et al., 2007).

Even within a single cultural group, logical reasoning abilities vary considerably from one individual to another, in part as a result of differences in background knowledge about particular topics. For example, adolescents (adults, too) often apply formal operational thought to topics about which they know a great deal yet think concretely about topics with which they're unfamiliar (Giroto & Light, 1993; M. C. Linn, Clement, Pulos, & Sullivan, 1989; Schliemann & Carraher, 1993). As an illustration, in a study by Pulos and Linn (1981), 13-year-olds were shown a picture similar to the one in Figure 2.6 and told, "These four children go fishing every week, and one child, Herb, always catches the most fish. The other children wonder why." If you look at the picture, you can see that Herb differs from the other children in several ways, including his location, the bait he uses, and the length of his fishing rod. Students who had fished a great deal more effectively separated and controlled variables for this situation than they did for the pendulum problem presented earlier, whereas the reverse was true for students with little or no fishing experience.

## CONTEMPORARY EXTENSIONS AND APPLICATIONS OF PIAGET'S THEORY

Despite its shortcomings, Piaget's theory has had considerable influence on present-day thinking about cognitive development and classroom practice. A few contemporary *neo-Piagetian* theories integrate elements of Piaget's theory with current theories of thinking and learning. Furthermore,

**FIGURE 2.6** What are some possible reasons that Herb is catching more fish than the others?



Source: Based on image created by Steven Pulos. Adapted with permission.

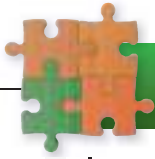


### MyEdLab

#### Video Example 2.4.

Knowledge about a particular content domain enhances children's ability to separate and control variables in that domain. For example, notice how a child with fishing experience (10-year-old Kent) identifies more variables in the fishing problem than does an older child who has never fished (14-year-old Alicia).





## Into The Classroom

### Applying Piaget's Theory

- Use Piaget's stages as a rough guide to what students at different grade levels can do, but don't take them too literally.**

Knowing from both research and her own experience that 6- and 7-year-olds can understand simple proportions in familiar situations, a first-grade teacher asks her students to tackle this problem: "Two children want to share five cupcakes so that each child gets the same amount. Show how much each child can have." When some of the students decide that each child can have two cupcakes, she points to the fifth cupcake and says, "They want to share this one too. How can they do that?"

- When young children show signs of egocentric thinking, express confusion or explain that others think differently.**

A kindergartner asks, "What's this?" about an object that is out of the teacher's view. The teacher responds, "What's *what*? I can't see the thing you're looking at."

- Relate abstract and hypothetical ideas to concrete objects and observable events.**

To help students understand that even seemingly weightless substances such as air have mass and weight, an eighth-grade teacher blows up a balloon and places it on one side of a balance scale. She then places an uninflated balloon on the other side of the scale. The inflated balloon tips the scale downward, showing that it weighs more than the uninflated one.

- Ask students to explain their reasoning about physical phenomena, and challenge illogical explanations.**

Sources: Empson, 1999, p. 295 (cupcake example); C. L. Smith, 2007 (balloon example).

When learning about pendulums, cooperative groups in a middle school science class conduct experiments with three variables (weight, length, and angle at which the pendulum is dropped) to see which variable or variables determine the rate at which a pendulum swings. After three of four students in one group assert that weight affects the oscillation rate, the teacher asks a series of questions that eventually lead the group to realize it has simultaneously varied both weight and length in its experiments.



MyEdLab

#### Video Example 2.5.

This video shows the pendulum example.

- Draw on adolescents' idealism to engage them in public service projects and other charitable endeavors.**

In a unit on Africa, several students in a ninth-grade social studies class express their horror about the extreme poverty in which some Africans live. The teacher mentions that a friend is traveling to Rwanda the following month and wants to take several large suitcases full of used children's clothing to give to an especially poor Rwandan village. Over the next few days the students ask their parents and neighbors for donations and gather many usable items for the teacher's friend to take.

educators have found many of Piaget's ideas quite useful in instructional settings. We'll examine three of his ideas—his clinical method, his emphasis on the importance of hands-on experiences, and his concept of disequilibrium—in upcoming sections. The Into the Classroom feature "Applying Piaget's Theory" offers additional suggestions for translating Piaget's ideas into classroom practice.

## NEO-PIAGETIAN THEORIES

**Neo-Piagetian theories** echo Piaget's belief that cognitive development depends somewhat on brain maturation. For instance, some neo-Piagetian theorists suggest that a component of the human memory system known as *working memory* is especially important for cognitive development. In particular, working memory is a brain-based mechanism that enables people to temporarily hold and think about a small amount of new information. Children's working memory capacity increases with age, and thus their ability to think about several things at the same time also increases (Case & Mueller, 2001; Fischer & Bidell, 2006; Lautrey, 1993).

Neo-Piagetian theorists reject Piaget's notion that a single series of stages characterizes children's overall cognitive development. However, they speculate that cognitive development in specific content domains—for example, in understanding numbers or spatial relationships—often has a stage-like nature (e.g., Case, 1985; Case & Okamoto, 1996; Fischer & Immordino-Yang, 2002). Children's entry into a particular stage is marked by the acquisition of new abilities, which children practice and gradually master over time. Eventually they integrate these abilities into more complex structures that mark their transition into a subsequent stage. Thus, as is true in Piaget's theory, the stages are *hierarchical*, with each one being constructed out of abilities acquired in the preceding stage.

You will learn more about working memory in Chapter 6.

Even in a particular subject area, however, cognitive development isn't necessarily a single series of stages through which children progress as if they were climbing rungs on a ladder. In some cases development might be better characterized as progression along "multiple strands" of skills that occasionally interconnect, consolidate, or separate in a weblike fashion (Fischer & Daley, 2007; Fischer & Immordino-Yang, 2002). From this perspective, children may acquire more advanced levels of competence in a particular area through any one of several pathways. For instance, as they become increasingly proficient in reading, children may gradually develop various word decoding and reading comprehension skills, and they draw on all of these skills when reading a book. However, the rate at which each skill is mastered varies from one child to the next.

### PIAGET'S CLINICAL METHOD AS AN ASSESSMENT TOOL

Earlier in the chapter we considered Piaget's clinical method, in which an adult probes children's thoughts about a particular task or problem through a sequence of individually tailored questions (recall the dialogue with Brian about the wooden beads). By presenting a variety of Piagetian tasks involving either concrete or formal operational thinking skills (e.g., conservation or separation and control of variables) and asking students to explain what they're thinking, we can gain valuable insights into their logical reasoning abilities (e.g., diSessa, 2007). We need not stick to traditional Piagetian reasoning tasks, however. To illustrate, a teacher might present various kinds of maps (e.g., a road map of Ireland, an aerial map of Chicago, a three-dimensional relief map of a mountainous area) and ask students to interpret what they see. Children in the early elementary grades are apt to interpret maps very concretely, perhaps thinking that lines separating states and countries are actually painted on the earth or that an airport symbolized by a small airplane has only one plane. They might also have difficulty with the scale of a map, perhaps thinking that a line can't be a road because "it's not fat enough for two cars to go on" or that a mountain depicted by a bump on a relief map isn't really a mountain because "it's not high enough" (Liben & Myers, 2007, p. 202). Understanding the concept of *scale* in a map requires proportional reasoning—an ability that doesn't fully emerge until after puberty—and thus it's hardly surprising that young children will be confused by it.



Probe students' reasoning about various logical thinking tasks and problems.

### HANDS-ON EXPERIENCES

Piaget suggested that exploration of the physical environment should be largely a child-initiated and child-directed effort. Young children can certainly learn a great deal from their informal interactions with sand, water, and other natural substances (Hutt, Tyler, Hutt, & Christopherson, 1989). And in the elementary and secondary school grades, opportunities to manipulate physical objects—or their virtual equivalents on a computer screen—can enhance students' understanding of basic mathematical and scientific concepts (M. C. Brown, McNeil, & Glenberg, 2009; Lorch et al., 2010; Sarama & Clements, 2009; Sherman & Bisanz, 2009).

Researchers are finding, however, that hands-on experiences are typically more effective *when combined with instruction* that helps students draw appropriate conclusions from what they observe (Fujimura, 2001; Hardy, Jonen, Möller, & Stern, 2006; R. E. Mayer, 2004). In the absence of teacher guidance and directive questions, students may draw inferences based solely on what they see and feel—for instance, erroneously concluding that a very small piece of Styrofoam must have no weight whatsoever—and they may fail to separate and control variables in their experimentation (M. C. Brown et al., 2009; Lorch et al., 2014; C. L. Smith, 2007).



Combine hands-on experiences with age-appropriate instruction that enables students to draw appropriate conclusions from their observations.

### CREATING DISEQUILIBRIUM: THE VALUE OF SOCIOGNITIVE CONFLICT

In the opening case study, the girls argue about various ways to solve a problem involving the use of a fraction ( $\frac{3}{4}$ ) in making apple tarts. When Jeanette offers a seemingly nonproductive idea ("But three-quarters equals three"), Kerri points out her illogical thinking ("But she can't make only three apple tarts!"). As noted earlier, interaction with peers helps children realize that others often view the world differently than they do and that their own ideas aren't always completely logical or accurate. Furthermore, interactions with age-mates that involve wrestling with contradictory viewpoints—interactions that involve **sociocognitive conflict**—create disequilibrium that may spur children to reevaluate and possibly revise their current understandings. Whereas

children may accept an adult's ideas without argument, some may be quite willing to disagree with and challenge the ideas of their peers (D. W. Johnson & Johnson, 2009b; Lampert, Rittenhouse, & Crumbaugh, 1996; M. C. Linn, 2008).

Ultimately, social interaction—not only with peers but also with adults—is probably even more important for children's cognitive development than Piaget realized. Lev Vygotsky's theory, which we turn to now, describes additional ways in which interactions with fellow human beings promote cognitive growth.

#### MyEdLab Self-Check 2.3

**MyEdLab Application Exercise 2.2.** As you watch children in this exercise, look for certain reasoning skills that Piaget described.



Have students wrestle with complex issues and problems in small groups, where they can hear opinions and arguments that might conflict with their own ways of thinking. Monitor such interactions to be sure that they are mutually respectful and socially appropriate.

## Vygotsky's Theory of Cognitive Development

In Piaget's view, children are largely in control of their own cognitive development; for example, they initiate interactions with objects in their environment and develop self-constructed understandings of what they observe. In contrast, an early Russian developmentalist, Lev Vygotsky, believed that the adults in any society intentionally *foster* children's cognitive development in a somewhat systematic manner. Because Vygotsky emphasized the importance of adult instruction and guidance for promoting cognitive development—and more generally because he emphasized the influence of social and cultural factors on children's cognitive growth—his perspective is known as a **sociocultural theory**.


Vygotsky and his students conducted many studies of children's thinking from the 1920s until Vygotsky's early death from tuberculosis in 1934. Instead of determining the kinds of tasks children could successfully perform *on their own* (as Piaget did), Vygotsky often examined the kinds of tasks children could complete *only with adult assistance*. For example, he described two hypothetical children who could, without help, do things that a typical 8-year-old might be able to do. He would give each of the children progressively more difficult tasks and offer a little bit of assistance, perhaps by asking a leading question or suggesting a reasonable first step. With such help, both children could almost invariably tackle more difficult tasks than they could handle on their own. However, the *range* of tasks that the two children could complete with assistance might be quite different, with one child stretching his or her abilities to succeed at typical 12-year-old-level tasks and the other succeeding only with typical 9-year-old-level tasks (Vygotsky, 1934/1986, p. 187).

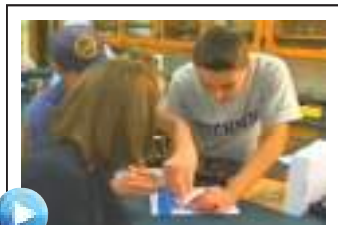
Western psychologists were largely unfamiliar with Vygotsky's work until the last few decades of the 20th century, when his major writings were translated from Russian into English (e.g., Vygotsky, 1978, 1934/1986, 1997). Although Vygotsky never had the chance to develop his theory fully, his views are clearly evident in many contemporary theorists' discussions of learning and development and have become increasingly influential in guiding teachers' classroom practices.

### VYGOTSKY'S BASIC ASSUMPTIONS

Vygotsky acknowledged that biological factors—such as maturational processes in the brain—play a role in cognitive development. Children bring certain characteristics and dispositions to the situations they encounter, and their responses vary accordingly. Furthermore, children's behaviors, which are influenced in part by inherited traits, affect the particular experiences children have (Vygotsky, 1997). However, Vygotsky's primary focus was on the role of children's social and cultural environments in fostering cognitive growth—and especially in fostering those complex mental abilities that are unique to human beings as a species. Following are central ideas and concepts in Vygotsky's theory.

- *Through both informal conversations and formal schooling, adults convey to children the ways in which their culture interprets and responds to the world.* Vygotsky proposed that as adults interact with children, they share the *meanings* they attach to objects, events, and, more generally, human experience. In the process they transform, or *mediate*, the situations

 Help students understand how different academic disciplines can enhance their ability to make sense of various physical and social events and phenomena in their lives.



**MyEdLab**

**Video Explanation 2.2.**

This video illustrates the use of cognitive tools in a high school physics class.

children encounter. Meanings can be conveyed through a variety of mechanisms, including language (spoken words, writing, etc.), mathematical symbols, graphic displays, fine arts, and music.

Informal conversations are one common mechanism through which adults pass along culturally relevant ways of interpreting situations. But even more important is formal education, through which teachers systematically impart the ideas, concepts, and terminology used in various academic disciplines (Vygotsky, 1934/1986). Although Vygotsky, like Piaget, saw value in allowing children to make some discoveries themselves, he also saw value in having adults pass along the discoveries of previous generations (Vygotsky, 1934/1986).

- *Every culture passes along physical and cognitive tools that make daily living more productive and efficient.* Not only do adults teach children specific ways of interpreting experiences but they also pass along specific tools that can help children tackle the various tasks and problems they're apt to face. Some tools, such as scissors, sewing machines, and computers, are physical objects. Others, such as writing systems, maps, and spreadsheets, are partly physical and partly symbolic. Still others, such as the concept of *fraction* and the process of division (recall the opening case study involving fractions of apples), may have little physical basis at all. In Vygotsky's view, acquiring tools that are at least partly symbolic or mental in nature—**cognitive tools**—greatly enhances growing children's thinking and functioning.
- *Thought and language become increasingly interdependent in the first few years of life.* One very important cognitive tool is language. For us as adults, thought and language are closely interconnected. We often think by using specific words that our language provides. For example, when we think about household pets, our thoughts may contain such words as *dog* and *cat*. In addition, we usually express our thoughts when we converse with others. In other words, we "speak our minds."

Vygotsky proposed that thought and language are separate functions for infants and young toddlers. In these early years, thinking occurs independently of language, and when language appears, it's first used primarily as a means of communication rather than as a mechanism of thought. But sometime around age 2, thought and language become intertwined: Children begin to express their thoughts when they speak, and they begin to think in words.

When thought and language first merge, children often talk to themselves—a phenomenon known as **self-talk** (you may also see the term *private speech*). Vygotsky suggested that self-talk serves an important function in cognitive development. By talking to themselves, children learn to guide and direct their own behaviors through difficult tasks and complex maneuvers in much the same way that adults have previously guided them. Self-talk eventually evolves into **inner speech**, in which children talk to themselves mentally rather than aloud. They continue to direct themselves verbally through tasks and activities, but others can no longer see and hear them do it (Vygotsky, 1934/1986). In other words, both self-talk and inner speech help children engage in *self-regulation*.

- *Complex mental processes begin as social activities and gradually evolve into internal mental activities that children can use independently.* Vygotsky proposed that many complex thought processes have their roots in social interactions. As children discuss objects, events, tasks, and problems with adults and other knowledgeable individuals, they gradually incorporate into their own thinking the ways in which the people around them talk about and interpret the world, and they begin to use the words, concepts, symbols, and strategies—in essence, the cognitive tools—that are commonly used in their culture.

The process through which social activities evolve into internal mental activities is called **internalization**. The progression from self-talk to inner speech just described illustrates this process: Over time, children gradually internalize adults' directions so that they are eventually giving *themselves* the directions.

Not all mental processes emerge as children interact with adults; some instead develop as children interact with peers. For example, children frequently argue with one another

Chapter 10 more fully describes the nature and development of children's ability to regulate their own behavior and thinking processes.

about a variety of matters—how best to carry out an activity, what games to play, who did what to whom, and so on. According to Vygotsky, having arguments helps children discover that there are often several ways to view the same situation. Eventually, he suggested, children internalize the arguing process, developing the ability to look at a situation from a variety of angles *on their own*.


- *Children appropriate their culture's tools in their own idiosyncratic manner.* Children don't necessarily internalize *exactly* what they see and hear in a social context. Rather, they often transform ideas, strategies, and other cognitive tools to suit their own needs and purposes—thus, Vygotsky's theory has a constructivist element to it. The term **appropriation** is often used to refer to this process of internalizing but also adapting the ideas and strategies of one's culture for one's own use.
- *Children can accomplish more difficult tasks when assisted by more advanced and competent individuals.* Vygotsky distinguished between two kinds of abilities that characterize children's skills at any particular point in development. A child's **actual developmental level** is the upper limit of tasks that he or she can perform independently, without help from anyone else. A child's **level of potential development** is the upper limit of tasks that he or she can perform with the assistance of a more competent individual. To get a true sense of children's cognitive development, Vygotsky suggested, we should assess their capabilities not only when performing alone but also when performing with assistance—a strategy that contemporary educators call *dynamic assessment*.

As mentioned earlier, Vygotsky found that children can typically do more difficult things in collaboration with adults than they can do on their own. For example, they can play more challenging piano pieces when an adult helps them locate some of the notes on the keyboard or provides suggestions about which fingers to use where. They can solve more difficult math problems when their teacher helps them identify critical problem components and potentially fruitful problem-solving strategies. And they can often read more complex prose in a reading group at school than they're likely to read independently at home.

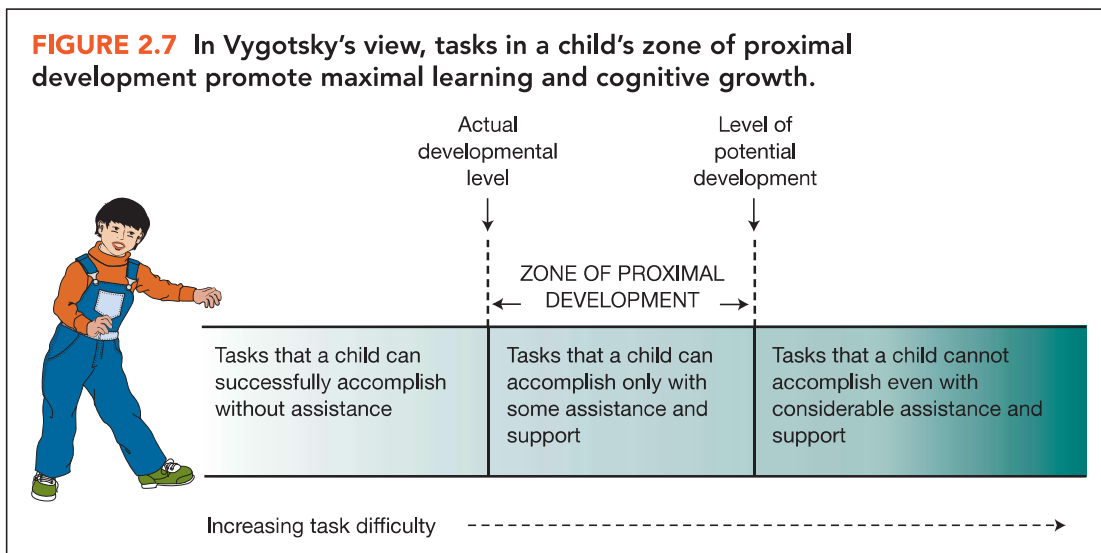
- *Challenging tasks promote maximum cognitive growth.* The range of tasks that children cannot yet perform independently but *can* perform with the help and guidance of others is, in Vygotsky's terminology, the **zone of proximal development (ZPD)** (see Figure 2.7). A child's zone of proximal development includes learning and problem-solving abilities that are just beginning to emerge and develop.

Vygotsky proposed that children learn very little from performing tasks they can already do independently. Instead, they gain new skills primarily by attempting tasks they can accomplish only with assistance and support—that is, when they attempt tasks within their zone of proximal development. Thus, it's the challenges in life, *not* the easy successes, that

Chapter 14 provides more details about dynamic assessment.

 Give students sufficient guidance to enable them to successfully accomplish difficult tasks.

**FIGURE 2.7** In Vygotsky's view, tasks in a child's zone of proximal development promote maximal learning and cognitive growth.



promote cognitive development. But whereas challenging tasks are beneficial, impossible tasks, which children can't do even with considerable structure and guidance, are of no benefit whatsoever (Vygotsky, 1987). For example, it would be pointless to ask most 5-year-olds to solve for  $x$  in an algebraic equation. In general, a child's ZPD sets a limit on what he or she is cognitively capable of learning.

As teachers, then, we should assign some tasks that students can accomplish successfully *only* with some support. In some instances, this support must come from us or other, more skillful individuals. In other situations, students of equal ability might work together to jointly accomplish difficult assignments—such as the apple-tarts problem in the opening case study—with each student bringing unique strengths to contribute to the overall effort.

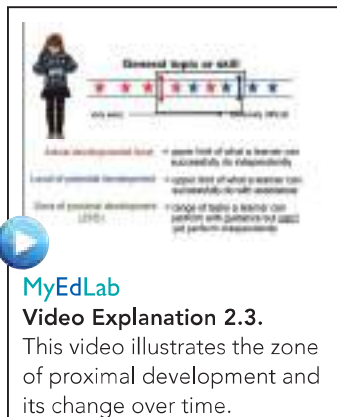
Regardless of the nature of the support we provide, we must remember that every student's ZPD will change over time. As some tasks are mastered, other, more complex ones will appear on the horizon to take their place. In addition, students' ZPDs may vary considerably in "width." Some students may, with assistance, be able to stretch several years above their actual (independent) developmental level; others may be able to handle tasks that are only slightly more difficult than what they can currently do on their own. In some instances, students with different zones of proximal development will need individualized tasks and assignments so that they all have challenges that optimally promote their personal cognitive growth.


- *Play allows children to cognitively "stretch" themselves.* One of us authors recalls how, as 5-year-olds, her son Jeff and his friend Scott sometimes played "restaurant." In a corner of Jeff's basement, the boys created a dining area from several child-sized tables and chairs, as well as a restaurant "kitchen" with a toy sink, stove, and supply of plastic dishes and food items. They also created menus, sometimes asking how to spell a word but more often guessing about a word's spelling. On one occasion they invited both sets of parents to "dine," and when the parents arrived, the boys wrote everyone's meal orders on paper tablets and scurried to the kitchen to assemble the requested items. Eventually they returned with the meals (hamburgers, French fries, and cookies—all of them plastic—plus glasses of imaginary milk), which the parents "ate" and "drank" with gusto.

In their restaurant play, the two boys took on several adult roles (restaurant manager, waiter, cook) and practiced a variety of adultlike behaviors. In real life such a scenario would be virtually impossible: Very few 5-year-olds have the cooking, reading, writing, mathematical, or organizational skills necessary to run a restaurant. Yet the element of make-believe brought these tasks within the boys' reach. In Vygotsky's words, "In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself" (Vygotsky, 1978, p. 102).

Furthermore, as children play, their behaviors must conform to certain standards or expectations. In the early elementary school years, children often act in accordance with how a father, teacher, or waiter would behave. In the organized group games and sports that come later, children must follow specific sets of rules. By adhering to such restrictions on their behavior, children learn to plan ahead, to think before they act, and to engage in self-restraint—skills critical for successful participation in the adult world (also see Coplan & Arbeau, 2009; A. Diamond, Barnett, Thomas, & Munro, 2007; Pellegrini, 2009).

Play, then, is hardly a waste of time. Instead, it provides a valuable training ground for the adult world. Perhaps for this reason it's seen in children worldwide.



 Give students time to explore new activities and roles through play.

## CRITIQUING VYGOTSKY'S THEORY

Vygotsky focused more on the processes through which children develop than on the characteristics that children of particular ages are likely to exhibit. He described stages of development but portrayed them in only the most general terms (e.g., see Vygotsky, 1997, pp. 214–216). In addition, Vygotsky's descriptions of developmental processes were often vague and speculative (Gauvain, 2001; Haenan, 1996; Moran & John-Steiner, 2003). For such reasons, Vygotsky's theory has been more difficult for researchers to test and either verify or disprove than has the case for Piaget's theory.

Nevertheless, contemporary theorists and educators have found Vygotsky's ideas insightful and helpful. Most significantly, his theory points out the many ways in which *culture* influences cognitive development. A society's culture ensures that each new generation benefits from the accumulating wisdom of preceding generations. Any culture guides children in certain directions by encouraging them to pay attention to particular stimuli (and not to others) and to engage in particular activities (and not in others). In addition, it provides a lens through which children come to view and interpret their experiences in culturally appropriate ways. We see obvious effects of culture in many of children's everyday activities—in the books they read, the roles they enact in pretend play, the extracurricular activities they pursue—but we must remember that culture permeates their unobservable thinking processes as well.

Furthermore, some research has supported Vygotsky's views regarding the progression and role of self-talk and inner speech. The frequency of children's audible self-talk decreases during the preschool and early elementary years, but this decrease is at first accompanied by an increase in whispered mumbling and silent lip movements, presumably reflecting a transition to inner speech (Bivens & Berk, 1990; Winsler & Naglieri, 2003). Self-talk increases when children are performing more challenging tasks, at which they must exert considerable effort to be successful (Berk, 1994; Schimmoeller, 1998). As you undoubtedly know from your own experience, even adults occasionally talk to themselves when they face new challenges!

## CONSIDERING DIVERSITY FROM THE PERSPECTIVE OF VYGOTSKY'S THEORY

Vygotsky's theory leads us to expect greater diversity among children—at least in cognitive development—than Piaget's theory does. As we've seen, children in any single age-group are apt to have different zones of proximal development: Tasks that are easy for some children may be quite challenging or virtually impossible for others. In addition, to the extent that specific cultural groups pass along unique concepts, ideas, and beliefs, children from different cultural backgrounds will acquire somewhat different knowledge, skills, and ways of thinking. For instance, children are more likely to acquire map-reading skills if they regularly encounter maps (e.g., of roads, subway systems, and shopping malls) in their community and family life (Liben & Myers, 2007). And children are more apt to have a keen sense of time if cultural activities are tightly regulated by clocks and calendars (K. Nelson, 1996).

## CONTEMPORARY EXTENSIONS AND APPLICATIONS OF VYGOTSKY'S THEORY

The Into the Classroom feature “Applying Vygotsky's Theory” presents concrete examples of how teachers might make use of Vygotsky's ideas. In the upcoming sections, we'll consider several ways in which contemporary theorists and educators have built on the foundations that Vygotsky laid.

### SOCIAL CONSTRUCTION OF MEANING

Contemporary psychologists have elaborated on Vygotsky's proposal that adults help children attach meanings to the objects and events around them. Often an adult will help a child make sense of the world through a joint discussion of a phenomenon or event they are both experiencing (Feuerstein, Feuerstein, & Falik, 2010; P. K. Murphy, Wilkinson, & Soter, 2011). Such an interaction, sometimes called a **mediated learning experience**, encourages the child to think about the phenomenon or event in particular ways—to attach labels to it, recognize principles that underlie it, draw certain conclusions from it, and so on. As an example, consider the following exchange, in which a 5-year-old boy and his mother are talking about a prehistoric animal exhibit at a natural history museum.

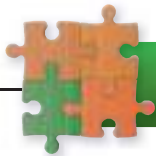
*Boy:* Cool. Wow, look. Look giant teeth. Mom, look at his giant teeth.

*Mom:* He looks like a saber tooth. Do you think he eats meat or plants?

*Boy:* Mom, look at his giant little tooth, look at his teeth in his mouth, so big.

*Mom:* He looks like a saber tooth, doesn't he. Do you think he eats plants or meat?

*Boy:* Ouch, ouch, ouch, ouch. (referring to sharp tooth)



## Into the Classroom

### Applying Vygotsky's Theory

#### Provide cognitive tools that students can use in thinking about and tackling new tasks.

A high school chemistry teacher places three equal-size inflated balloons into three beakers of water, one heated to almost 100°C, one kept at room temperature, and one containing recently melted ice. The students all agree that the balloon placed in the warmest water expands the most. The teacher then introduces Charles's Law as a means of determining how much the volume of a gaseous substance such as air will change as its temperature changes.



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#### Video Example 2.6.

This video shows the Charles's Law example.

#### Encourage students to talk themselves through difficult tasks.

As his students work on complex mathematical equations such as this one

$$x = \frac{2(4 \times 9)^2}{6} + 3$$

a junior high school mathematics teacher gives students a mnemonic (Please **excuse my dear Aunt Sally**) they might repeat to themselves to help them remember the order in which they should perform various operations (**p**arentheses, **e**xponents, **m**ultiplication and **d**ivision, **a**ddition and **s**ubtraction).

#### Present some tasks that students can perform successfully only with assistance.

When a fifth-grade teacher assigns students their first research paper, he breaks the process into several discrete steps and provides a great deal of structure and guidance.

#### Provide sufficient support, or scaffolding, to enable students to perform challenging tasks successfully; gradually withdraw the support as they become more proficient.

An elementary physical education teacher begins a lesson on tumbling by demonstrating forward and backward rolls in slow motion and physically guiding her students through the correct movements. As the students become more skillful, the teacher stands back from the mat and gives verbal feedback about how to improve.

#### Have students work in small groups to accomplish complex, multifaceted tasks.

A middle school art teacher asks his students to work in groups of four or five to design large murals that depict various ecosystems—rainforest, freshwater wetland, prairie, desert, and tundra—and the kinds of plant and animal species that live in each one. The groups then paint their murals on the walls of the school corridors.

#### Engage students in adult activities that are common in their culture.

A high school publishes a monthly school newspaper with news articles, editorials, cartoons, announcements of upcoming events, advertisements for local businesses, and classified ads. Students assume various roles, including reporters, cartoonists, editors, proofreaders, photocopiers, marketers, and distributors.

#### Give young children time to practice adult roles and behaviors through play.

A kindergarten teacher equips his classroom with many household items (e.g., dress-up clothes, cooking utensils, a toy cell phone) so that students can play house during free-play time.

*Mom:* Do you think he eats plants or meat?

*Boy:* Meat.

*Mom:* How come?

*Boy:* Because he has sharp teeth. (growling noises) (Ash, 2002, p. 378)

Even without his mother's assistance, the boy would almost certainly have learned something about saber-toothed tigers from his museum visit. Yet Mom helps him make better sense of what he is looking at than he might have done on his own—for instance by using the label *saber tooth* and helping him connect tooth characteristics to eating preferences. Notice how persistent Mom is in asking her son to make the tooth–food connection: She continues to ask him about meat versus plants until the boy finally correctly infers that the tigers must have been meat eaters.

In addition to co-constructing meanings with adults, children and adolescents often talk among themselves to make sense of their experiences. School provides an ideal setting in which young people can toss around ideas and perhaps reach consensus about how best to interpret and understand a complex issue or problem—perhaps about a challenging math problem involving apple tarts, perhaps about troubling interpersonal dynamics with peers, or perhaps about moral dilemmas with no easy right and wrong answers.

Interacting with adults and interacting with peers possibly play somewhat different roles in children's development. Adults usually have more experience and expertise than age-mates do,

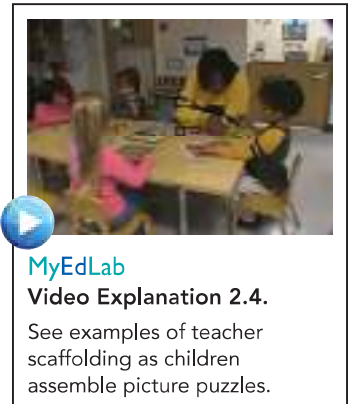


and they tend to be more skillful teachers. Accordingly, adults are often the partners of choice when children are trying to master complex new tasks and procedures (Gauvain, 2001; Radziszewska & Rogoff, 1988). Working with peers has a different set of advantages. First, as mentioned in the earlier discussion of Piaget's theory, children who hear age-mates express perspectives quite different from their own may experience sociocognitive conflict that motivates them to overhaul their own understandings. Second, as Vygotsky suggested, peer interactions provide a social context in which children practice and eventually internalize complex cognitive processes, such as effective reading comprehension and argumentation skills (Andriessen, 2006; Chinn, Anderson, & Waggoner, 2001; P. K. Murphy et al., 2011). A third benefit is that children learn valuable social behaviors—including how to plan a joint enterprise and how to coordinate differing roles—when they work on cognitive tasks with their peers (Gauvain, 2001).

## SCAFFOLDING

Recall Vygotsky's suggestion that children are most likely to benefit from tasks and activities they can successfully accomplish only with the assistance and support of more competent individuals—that is, tasks within their zone of proximal development. Contemporary theorists have identified a variety of techniques—collectively known as **scaffolding**—that can help students accomplish challenging tasks in instructional contexts. The following are examples:

- Demonstrate correct performance in a manner that students can easily imitate.
- Divide a complex task into several smaller, simpler activities.
- Provide a structure or set of guidelines for accomplishing the task (e.g., see Figure 2.8).
- Provide a calculator, computer software (word processing program, spreadsheet, etc.), or other technology that makes some aspects of the task easier.
- Keep students' attention focused on critical aspects of the task.
- Ask questions or give hints that encourage students to think about the task in productive ways.
- Give frequent feedback about how students are progressing. (A. Collins, 2006; Gallimore & Tharp, 1990; Rogoff, 1990; van de Pol, Volman, & Beishuizen, 2010; D. Wood, Bruner, & Ross, 1976)



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### Video Explanation 2.4.

See examples of teacher scaffolding as children assemble picture puzzles.

**FIGURE 2.8** High school language arts teacher Jeff Ormrod uses this checklist to scaffold ninth graders' efforts to write a five-paragraph essay.

### Essay Checklist

Use the following checklist each time you write an essay to make sure that you have completed the steps and have every part you need.

#### Introduction

- My first sentence is a Hook sentence.
- I have a clear Thesis sentence that answers the question of the assignment.
- I have a List sentence that introduces my three main body paragraphs.
- I have a Transition sentence at the end.

#### Main Body Paragraphs

- Each of my main body paragraphs talks about one main idea or point.
- Each of my main body paragraphs gives information that supports this point.

#### Conclusion

- My conclusion paragraph restates my List sentence in a different way.
- My conclusion paragraph restates my Thesis sentence.
- My conclusion paragraph connects my essay to me or to the world.

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Depending on their particular knowledge and ability levels, different students in any single grade may need different kinds of scaffolding to support their success in a task. As students become more adept at performing a new task, scaffolding is ideally modified to nurture newly emerging skills. And over time the scaffolding is gradually phased out—a process known as *fading*—until students can complete the task entirely on their own. In fact, providing *too much* scaffolding—more than students need—can overwhelm and distract them (van Merriënboer & Sweller, 2005).

### GUIDED PARTICIPATION IN CHALLENGING NEW ACTIVITIES

When you were a young child, did you sometimes help a parent or older sibling bake cookies or other goodies? Did the cook let you pour, measure, and mix ingredients when you were old enough to do so? Did the cook also give you directions or suggestions as you performed these tasks? Such experiences are examples of **guided participation**, in which children gain new skills by working on complex, meaningful tasks in close, scaffolded collaboration with an adult or more experienced peer. As children acquire greater competence, they gradually take a more central role in an activity until, eventually, they're full-fledged participants (Rogoff, 2003; Rogoff et al., 2007). From a Vygotskian perspective, guided participation enables children to engage in behaviors and thinking skills within their zone of proximal development. It also helps children tie newly acquired skills and thinking abilities to the specific contexts in which they're likely to be useful later on.

Guided participation can take many forms in instructional settings. For instance, we might get students involved in scientific investigations, creation of museum displays, or focused Internet searches, while always providing the guidance and support students need to accomplish such tasks successfully. As we engage students in these activities, we might also use some of the language that adults frequently use in such contexts. For example, when conducting scientific investigations with students, we should use such words as *hypothesis*, *evidence*, and *theory* as we go along (Perkins, 1992).

### APPRENTICESHIPS

An especially intensive form of guided participation is an **apprenticeship**, in which a novice works with an expert mentor for a lengthy period to learn how to perform many complex tasks within a particular domain. The expert provides considerable structure and guidance throughout the process, gradually removing scaffolding and giving the novice more independence and responsibility as competence increases (A. Collins, 2006; Rogoff, 1990, 1991). Many cultures use apprenticeships as a means of gradually introducing children to particular skills and trades in the adult community—perhaps weaving, tailoring, or playing a musical instrument (D. J. Elliott, 1995; Lave & Wenger, 1991; Rogoff, 1990).

In a good apprenticeship, a student learns not only how to perform a task but also how to productively *think about* the task—a situation known as a **cognitive apprenticeship** (J. S. Brown, Collins, & Duguid, 1989; A. Collins, 2006; Dennen & Burner, 2008). For instance, a student might work with a biologist to collect samples of various plants in a certain ecosystem, or a student might work with an experienced carpenter to design and build a kitchen cabinet. In the process of talking about various aspects of the task, the expert and student together analyze the problem at hand and develop the best approach to take, and the expert models effective ways of thinking about and mentally processing the situation.

Apprenticeships differ widely from one context to another, but they typically have some or all of these features (A. Collins, 2006; A. Collins, Brown, & Newman, 1989):

- *Modeling*: The mentor carries out the task, simultaneously thinking aloud about the process, while the learner observes and listens.
- *Coaching*: As the learner performs the task, the mentor gives frequent suggestions, hints, and feedback.
- *Scaffolding*: The mentor provides various forms of support for the learner, perhaps by simplifying the task, breaking it into smaller and more manageable components, or providing less complicated equipment.
- *Articulation*: The learner explains what he or she is doing and why, allowing the mentor to examine the student's knowledge, reasoning, and problem-solving strategies.
- *Reflection*: The mentor asks the learner to compare his or her performance with that of experts, or perhaps with an ideal model of how the task should be done.

A concept very similar to *guided participation* is *legitimate peripheral participation*, discussed in Chapter 8.

- *Increasing complexity and diversity of tasks:* As the learner gains greater proficiency, the mentor presents more complex, challenging, and varied tasks to complete.
- *Exploration:* The mentor encourages the learner to frame questions and problems on his or her own, and in doing so to expand and refine acquired skills.



Give prompts that get students thinking about a complex task as an expert might.

Because apprenticeships are clearly labor intensive, their use in the classroom isn't always practical or logistically feasible. Even so, we can certainly use elements of an apprenticeship to help students develop more complex skills. For example, we might help students think about writing tasks in the same ways that expert writers do by providing such prompts as “To liven this up, I'll . . .” and “I can tie this together by . . .” Prompts like these provide the same sort of scaffolding that an expert writer might provide, and they help students develop more sophisticated writing strategies (S. L. Benton, 1997; Scardamalia & Bereiter, 1985; Wong, Hoskyn, Jai, Ellis, & Watson, 2008).

## CONTRASTING PIAGET'S AND VYGOTSKY'S THEORIES

Both Piaget and Vygotsky have had a profound influence on contemporary views of learning, thinking, and cognitive development. If we look beyond their differing terminologies, we can see some common themes in the two perspectives. First, both theorists suggested that children acquire increasingly complex thinking processes with age and experience. Second, both argued for the importance of challenge, perhaps in the form of puzzling new information (Piaget's *disequilibrium*) or perhaps in the form of tasks that can be completed only with another person's support (Vygotsky's *zone of proximal development*). And third, at any given point in development children are cognitively ready for some experiences but not for others. In Piaget's view, a child can accommodate to new objects and events only when the child can, to some degree, also assimilate them into existing schemes—that is, there must be some overlap between the “new” and the “old.” From Vygotsky's perspective, some challenging new tasks may fall within a child's ZPD—and thus be accomplishable with guidance and support—but other tasks are likely to be out of reach for the time being.

Nevertheless, Piaget's and Vygotsky's theories differ in significant ways. For one thing, Piaget maintained that children's cognitive development is largely the result of their own efforts—for instance, their informal experiments with physical objects and their attempts to restore equilibrium in the face of puzzling events. In contrast, Vygotsky placed considerable emphasis on the role of adults and other, more advanced individuals, who can mediate new experiences and provide needed support during challenging activities. The difference, then, is one of self-exploration and discovery (Piaget) versus guided exploration and instruction (Vygotsky).

A second key difference lies in the potential influence of the culture in which children grow up. Piaget recognized that cultural differences might have an impact, but he didn't systematically explore them in children's thinking processes. In Vygotsky's theory, however, culture is of paramount importance in molding the specific thinking skills children acquire—a perspective that Bronfenbrenner echoed in describing the multiple layers of environmental influence on children's development. Increasingly, contemporary researchers have come to the same conclusion: Children's cultural environments can have a *huge* influence on what children learn and how they develop.

Finally, the two theorists offer differing perspectives on how language enters into the picture. For Piaget, language certainly enhances cognitive development: It provides many labels (*symbols*) that help children mentally represent their world, and it's the primary means through which children gain knowledge of other people's diverse perspectives on various situations and topics. For Vygotsky, on the other hand, language is absolutely essential for cognitive growth. Children's thought processes are internalized versions of social interactions that are largely verbal in nature. Furthermore, in their conversations with adults, children learn the meanings their culture ascribes to particular events and gradually begin to interpret the world in culture-specific ways. In addition, through two language-based phenomena—self-talk and inner speech—children begin to guide their own behaviors in ways that others have previously guided them.

With such benefits in mind, many contemporary theorists share Piaget's and Vygotsky's belief that acquiring language is an important—perhaps the *most* important—factor in cognitive development (e.g., Pinker, 2007; Premack, 2004; Spelke, 2003). We can better understand cognitive development, then, when we also know something about language development.

Chapter 4 describes a variety of cultural and ethnic differences that can shape children's behaviors and development.

**MyEdLab Self-Check 2.4**

**MyEdLab Application Exercise 2.3.** This short exercise can give you practice in determining whether or not students are working within their ZPDs.

**MyEdLab Application Exercise 2.4.** In this exercise, you can apply your knowledge of Vygotsky's concepts to a variety of classroom scenarios.

## Language Development

Acquiring the language of one's culture is an extremely complex and challenging undertaking. To understand and use a language effectively, children must master four basic components of the language. First, they must master their language's *phonology*: They must know how words sound and be able to produce the sequence of sounds that make up any given word. Second, they must master *semantics*, the meanings of many thousands of words. Third, they must have a good command of *syntax*, knowing how words can legitimately be combined to form understandable phrases and sentences. And finally, children must master the *pragmatics* of their language—the social conventions and speaking strategies that enable effective communication with others.

Mastering these four components of language is a remarkable achievement for any child, yet before children reach kindergarten, most of them have acquired sufficient proficiency in language to carry on productive conversations with the people around them. Their language development continues throughout childhood and adolescence, in part as a result of informal social interactions and in part as a result of formal instruction (see Table 2.2).

Some aspects of language development during the school years reflect an increasing ability to think abstractly about physical and social phenomena. For example, abstract thought enables children to reflect, deliberately and consciously, on the general nature and functions of language—an acquisition known as **metalinguistic awareness** (Owens, 2008; Yaden & Templeton, 1986). With such awareness comes an ability to recognize the figurative nature of words—the nonliteral meanings of proverbs, the symbolism in poems and literature, and so on. At the same time, children's ever-expanding language capabilities probably also *help* them think abstractly (K. Nelson, 1996; Pinker, 2007).

### THEORETICAL ISSUES REGARDING LANGUAGE DEVELOPMENT

Without doubt, children's immediate environments play a significant role in their language development. The richer the language that children hear—that is, the greater the variety of words and the greater the complexity of syntactic structures to which other people expose them—the faster their vocabulary develops (Hoff, 2003; Raikes et al., 2006; Risley & Hart, 2006). Yet children don't simply absorb the language spoken around them. Instead, they appear to use what they hear to construct their own understandings of the language, including knowledge about word meanings, rules governing how words can be combined into sentences, and so on (Cairns, 1996; Cromer, 1987; Karmiloff-Smith, 1993). Thus, we see in language development some of the knowledge *construction* of which Piaget spoke.




Most developmental theorists agree that heredity is also involved in language development to some degree. Human beings have the capacity to acquire a far more complex language than any other species on the planet. Exactly *what* human beings inherit that enables them to learn language is a matter of considerable controversy, however. At a minimum, infants inherit a few key predispositions—for instance, a preference for human voices over other sounds and an ability to hear very subtle differences among speech sounds—that make language learning possible (DeCasper & Fifer, 1980; Jusczyk, 1995; P. K. Kuhl, 2004; J. L. Locke, 1993). In addition, some theorists believe that part of our genetic heritage is a *language acquisition device*, a language-specific learning mechanism that enables infants and toddlers to acquire many intricacies of language in an amazingly short amount of time (Chomsky,



Children in the early and middle elementary grades have only limited ability to make sense of figurative language. Here 8-year-old Jeff takes a common expression at face value, rather than recognizing its underlying meaning: that someone has ordered more food than can possibly be eaten.


## DEVELOPMENTAL TRENDS

TABLE 2.2 • Examples of Linguistic Characteristics and Abilities at Different Grade Levels

GRADE LEVEL	AGE-TYPICAL CHARACTERISTICS	EXAMPLE	SUGGESTED STRATEGIES
 K–2	<ul style="list-style-type: none"> <li>• Knowledge of 8,000–14,000 words by age 6; understandings of some words only partially correct (e.g., use of the word <i>animal</i> may be restricted largely to four-legged mammals)</li> <li>• Difficulty understanding lengthy, complex sentences (e.g., those with multiple clauses)</li> <li>• Superficial understanding of being a “good listener” (e.g., just sitting quietly)</li> <li>• Literal interpretations of messages and requests (e.g., not realizing that “Goodness, this class is noisy” means “Be quiet”)</li> <li>• Increasing ability to tell a story, both orally and in writing</li> <li>• Mastery of most sounds; some difficulty pronouncing <i>r</i>, <i>th</i>, <i>dr</i>, <i>sl</i>, and <i>str</i></li> <li>• Occasional use of regular word endings (<i>-s</i>, <i>-ed</i>, <i>-er</i>) with irregular words (<i>sheeps</i>, <i>goed</i>, <i>gooder</i>)</li> <li>• Basic etiquette in conversations (e.g., taking turns, answering questions)</li> <li>• Reluctance to initiate conversations with adults (for many students from Asian and Mexican American backgrounds)</li> </ul>	<p>When two police officers visit a first-grade class to talk about how to go to and from school safely each day, the students listen quietly and respectfully. After the visit, however, the students can recall very little about what the officers have told them.</p>	<ul style="list-style-type: none"> <li>■ Read age-appropriate storybooks as a way of enhancing vocabulary.</li> <li>■ Give gentle corrective feedback when students’ use of words indicates inaccurate understanding.</li> <li>■ Work on listening skills (e.g., sitting quietly, paying attention, trying to understand and remember).</li> <li>■ Ask follow-up questions to make sure students accurately understand important messages.</li> <li>■ Ask students to construct narratives about recent events (e.g., “Tell me about your camping trip last weekend”).</li> </ul>
 3–5	<ul style="list-style-type: none"> <li>• Incomplete knowledge of irregular word forms</li> <li>• Correct pronunciation of all sounds in one’s language (by age 9 for typically developing children)</li> <li>• Sustained conversations about concrete topics</li> <li>• Increasing ability to take listeners’ prior knowledge into account during explanations</li> <li>• Construction of stories with plots and cause-and-effect relationships</li> <li>• Linguistic creativity and word play (e.g., rhymes, word games)</li> </ul>	<p>Students in a third-grade class love corny jokes and riddles that involve a play on words. For example, many are amused by “Why did the cookie go to the doctor?” (“He felt crummy”) and “Why couldn’t the sailors play cards?” (“Because the captain was standing on the deck”).</p>	<ul style="list-style-type: none"> <li>■ Teach irregular word forms (e.g., the past tense of <i>ring</i> is <i>rang</i>, the past tense of <i>bring</i> is <i>brought</i>).</li> <li>■ Consult with a speech-language specialist if articulation problems persist in the upper elementary grades.</li> <li>■ Use group discussions as a way to explore academic subject matter.</li> <li>■ Have students create short stories that they present orally or in writing.</li> <li>■ Encourage jokes and rhymes that capitalize on double meanings and homonyms (i.e., sound-alike words).</li> </ul>
 6–8	<ul style="list-style-type: none"> <li>• Knowledge of about 50,000 words at age 12</li> <li>• Increasing knowledge of words used in particular academic disciplines (e.g., <i>ecosystem</i> in science, <i>hypotenuse</i> in mathematics)</li> <li>• Emerging ability to carry on lengthy conversations about abstract topics</li> <li>• Emerging ability to look beyond literal interpretations; comprehension of simple proverbs and increasing ability to detect sarcasm</li> <li>• Increasing metalinguistic awareness; that is, increasing ability to reflect on the underlying nature of language</li> <li>• Increasing proficiency in expository (nonfiction) writing, especially with teacher scaffolding</li> </ul>	<p>Students in a sixth-grade class write better persuasive essays when their teacher gives them explicit guidance about elements to include, including (1) an introductory statement expressing one’s opinion, (2) supporting evidence for that opinion, (3) reasons why other people might disagree, and (4) explanations of why those reasons are invalid.</p>	<ul style="list-style-type: none"> <li>■ Assign reading materials that introduce new vocabulary.</li> <li>■ Introduce some of the terminology used by experts in various content areas (e.g., <i>simile</i> in language arts, <i>molecule</i> in science).</li> <li>■ Conduct structured debates to explore controversial issues.</li> <li>■ Ask students to consider the underlying meanings of common proverbs.</li> <li>■ Explore the nature of words and language as entities in and of themselves.</li> <li>■ Frequently ask students to write about topics; provide guidance about effective writing and frequent feedback about what students have written.</li> </ul>

(continued)

TABLE 2.2 (Continued)

GRADE LEVEL	AGE-TYPICAL CHARACTERISTICS	EXAMPLE	SUGGESTED STRATEGIES
 9–12	<ul style="list-style-type: none"> <li>• Knowledge of about 80,000 words</li> <li>• Acquisition of many vocabulary words related to particular academic disciplines</li> <li>• Subtle refinements in syntax, mostly as a result of formal instruction</li> <li>• General ability to understand figurative language (e.g., metaphors, proverbs, hyperbole)</li> <li>• Significant improvements in expository writing, especially with experience and constructive feedback</li> </ul>	When a ninth-grade class reads Robert Frost's poem "The Road Not Taken," most students realize that the poem is only superficially about choosing one of two paths through the woods—that at a deeper level it's about choosing among various paths in life.	<ul style="list-style-type: none"> <li>■ Regularly use the terminologies associated with various academic disciplines.</li> <li>■ Distinguish between similar abstract words (e.g., <i>weather</i> vs. <i>climate</i>, <i>velocity</i> vs. <i>acceleration</i>).</li> <li>■ Explore complex syntactic structures (e.g., multiple embedded clauses).</li> <li>■ Consider the underlying meanings and messages in poetry and fiction.</li> <li>■ When students have a native dialect other than Standard English, encourage them to use it in informal conversations and creative writing; encourage Standard English for more formal situations.</li> </ul>

Sources: Adger, Wolfram, & Christian, 2007; Byrnes, 1996; Capelli, Nakagawa, & Madden, 1990; S. Carey, 1978, 1985; Ferretti, MacArthur, & Dowdy, 2000; C. A. Grant & Gomez, 2001; K. R. Harris, Graham, & Masoni, 2006; K. R. Harris, Santangelo, & Graham, 2010; Karmiloff-Smith, 1979; Maratsos, 1998; T. M. McDevitt & Ford, 1987; T. M. McDevitt, Spivey, Sheehan, Lennon, & Story, 1990; Nippold, 1988; O'Grady, 1997; Owens, 2008; Reich, 1986; Stanovich, 2000; Thelen & Smith, 1998.

1972, 2006; M. Gopnik, 1997; Karmiloff-Smith, 1993). Other theorists believe instead that children learn language in much the same way they learn other things about their environment and culture: through detecting and making use of regular patterns of input from their social environment (Gentner & Namy, 2006; Pelucchi, Hay, & Saffran, 2009; Saffran, 2003).

Research evidence does point to a language-specific developmental mechanism for at least *some* aspects of language learning (Lai, Fisher, Hurst, Vargha-Khadem, & Monaco, 2001; Maratsos, 1998; Trout, 2003). Children of all cultures learn language very quickly and acquire complex syntactic structures even when those structures aren't necessary for effective communication. In addition, brain research reveals that certain parts of the left hemisphere seem to be biologically predisposed to specialize in either understanding or producing speech (Aitchison, 1996; J. L. Locke, 1993).

Additional evidence for heredity's influence comes from research findings suggesting that there may be *sensitive periods* in some aspects of language development. Children who have little or no exposure to *any* language in the early years often have trouble acquiring complex language later on, even with intensive language instruction (Curtiss, 1977; Newport, 1990). Furthermore, when learning a *second* language, people have an easier time mastering correct pronunciations, various verb tenses, and complex grammatical structures if they're immersed in the language during childhood or early adolescence (Bialystok, 1994; Bortfeld & Whitehurst, 2001; Bruer, 1999; M. S. C. Thomas & Johnson, 2008). Possibly such sensitive periods reflect biologically built-in time frames for learning language. Alternatively, perhaps what appear to be predetermined "best" times for learning particular aspects of language are simply the result of the brain's tendency to adapt fairly quickly to whatever forms its early auditory environment takes (P. K. Kuhl, 2004; P. K. Kuhl, Conboy, Padden, Nelson, & Pruitt, 2005).

## DIVERSITY IN LANGUAGE DEVELOPMENT

Some diversity in language development seems to be the result of biology. For instance, children with a **specific language impairment** develop normally in all respects except for language. These children have trouble perceiving and mentally processing particular aspects of spoken language—perhaps the quality, pitch, duration, or intensity of specific speech sounds. Often, although not always, the source of the impairment can be traced to heredity or a specific brain abnormality (Bishop, 2006; Bishop, McDonald, Bird, & Hayiou-Thomas, 2009; Corriveau, Pasquini, & Goswami, 2007; Spinath, Price, Dale, & Plomin, 2004).

Cultural factors play a role in linguistic diversity as well. For example, different cultural groups may nurture different *dialects*—distinct forms of a language that characterize particular ethnic groups or geographic regions—and different social conventions for human conversation (i.e., different pragmatic skills) (Adger et al., 2007; Kitayama & Cohen, 2007; Tyler, Uqdah, et al., 2008). Occasionally a cultural or ethnic group specifically nurtures certain aspects of language development. For example, many inner-city African American communities make heavy use of figurative language—such as similes, metaphors, and hyperbole (intentional exaggeration)—in

Chapter 4 looks more closely at the nature and implications of children's dialects.

their day-to-day conversations, jokes, and stories (C. D. Lee, 2005; H. L. Smith, 1998; Smitherman, 2007). The following anecdote illustrates this point:

I once asked my mother, upon her arrival from church, “Mom, was it a good sermon?” To which she replied, “Son, by the time the minister finished preaching, the men were crying and the women had passed out on the floor.” (H. L. Smith, 1998, p. 202)

With such a rich oral tradition, it isn’t surprising that many inner-city African American youth are especially advanced in their use and understanding of figurative language (Ortony, Turner, & Larson-Shapiro, 1985; H. L. Smith, 1998; Smitherman, 2007).

## SECOND-LANGUAGE LEARNING AND ENGLISH LANGUAGE LEARNERS

As mentioned earlier, exposure to a second language in childhood or early adolescence may be especially important for acquiring flawless pronunciation and certain aspects of syntax. Early exposure to a second language seems to be most advantageous if the second language is very different from the first. For example, a native English speaker benefits more from an early start in Arabic or Navajo than from an early start in, say, Spanish or German (Bialystok, 1994; Strozer, 1994). Aside from such caveats, there appears to be no definitive “best” time to begin studying a second language (e.g., P. K. Kuhl et al., 2005; G. Stevens, 2004).

Yet beginning second-language instruction in the early years has other noteworthy advantages. For one thing, it appears that learning a second language facilitates achievement in such other academic areas as reading, vocabulary, and grammar (Diaz, 1983; Reich, 1986). Instruction in a foreign language also sensitizes young children to the international and multicultural nature of the world. Students who learn a second language during the elementary school years express more positive attitudes toward people who speak that language and are more likely to enroll in foreign language classes in high school (Reich, 1986).

## BILINGUALISM

At least half of the world’s children are *bilingual*—that is, they speak at least two languages fluently (Hoff-Ginsberg, 1997). Although children who grow up in bilingual environments may initially have more limited vocabularies in each language, research reveals clear long-term advantages of bilingualism. Bilingual children appear to have a head start in their development of metalinguistic awareness (Adesope, Lavin, Thompson, & Ungerleider, 2010; Bialystok, 2001). For instance, in the early elementary grades, bilingual children have greater **phonological awareness**—awareness of the individual sounds, or *phonemes*, that make up spoken words—and this awareness can get them off to an especially good start in learning to read (X. Chen et al., 2004; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). Furthermore, when children are truly fluent in both languages, they tend to perform better on tasks requiring focused attention and on tasks requiring flexible, creativity thinking (Adesope et al., 2010; Bialystok, Craik, Green, & Gollan, 2009). Their superior performance on such tasks may be partly the result of enhanced development in certain areas of the brain (Espinosa, 2008; Mechelli et al., 2004).

Being bilingual can have cultural and social advantages as well. In any English-speaking country, mastery of spoken and written English is, of course, essential for long-term educational and professional success. But when a resident of that country belongs to a cultural group that speaks a different language, maintaining social relationships within the culture requires knowledge of its language (McBrien, 2005b). For instance, in many Native American groups, the ancestral language is important for communicating oral history and cultural heritage and for conducting local business (McCarty & Watahomigie, 1998). And Puerto Rican children in the United States often speak Spanish at home as a way of showing respect to their elders (Torres-Guzmán, 1998). Finally, at school, when different students in a single classroom each speak only one of two different languages (perhaps some speaking only English and others speaking only Spanish), teaching students both languages increases student interaction and cross-cultural understanding (A. Doyle, 1982; Padilla, 2006).

## TEACHING A SECOND LANGUAGE

Most children in Western, English-speaking countries are exposed to only one language before they reach school age. That single language may or may not be English. School-age children who



Make it possible for students of all ages to learn one or more foreign languages.



MyEdLab

### Video Example 2.7.

Sometimes bilingualism involves knowing one spoken language and one manual language (e.g., American Sign Language). In the classroom shown in this video, what evidence do you see that such bilingualism enables productive interactions among hearing children and children who have profound hearing loss?

are fluent in their native language but not in English are often referred to as **English language learners (ELLs)**. To the extent that elementary and secondary school students have limited knowledge of English, they're apt to have trouble with schoolwork in an English-based classroom (Kieffer, 2008; Padilla, 2006; Slavin & Cheung, 2005; Valdés, Bunch, Snow, & Lee, 2005).

Just as very young children typically learn their native language through informal daily exposure, so, too, can they learn two languages simultaneously if they have frequent, ongoing exposure to both languages. However, when children begin to learn a second language at an older age, perhaps in the elementary grades or even later, they often learn it more quickly if their language-learning experiences are fairly structured (Dixon et al., 2012; Strozer, 1994).

Yet teaching a second language for one 45-minute period a day—as is typically done in high schools—hardly promotes mastery. Two more intensive approaches, immersion and bilingual education, can be quite effective, with each being useful in somewhat different situations. To keep our discussion simple, let's assume that students are living in an English-speaking country. If these students are native English speakers, total **immersion** in the second language—hearing and speaking it almost exclusively in the classroom during the school day—appears to be the more effective approach. A variation of this approach is a *dual-immersion* program, in which some topics are taught exclusively in English and others are taught exclusively in the second language. For native English speakers living in an English-speaking country, immersion in the second language for part or all of the school day helps students acquire proficiency in the language fairly quickly, and any adverse effects on achievement in other academic areas appear to be short lived (Bialystok et al., 2009; Collier, 1992; Genesee, 1985; Padilla, 2006).

In contrast, English language learners living in an English-speaking country typically fare better in **bilingual education**, in which they receive intensive instruction in English while studying other academic subject areas in their native language. Not only is their academic achievement at least as good or better in bilingual education, but they also have greater self-esteem and better attitudes toward school (Dixon et al., 2012; Garcia & Jensen, 2009; Marsh, Hau, & Kong, 2002; Tong, Lara-Alecio, Irby, Mathes, & Kwok, 2008; Wright, Taylor, & Macarthur, 2000). The optimal bilingual education program proceeds through a gradual phase-in of English in instruction, perhaps in a sequence such as the following:

1. Students join native-English speakers for classes in subject areas that don't depend too heavily on language skills (e.g., art, music, physical education). They study other subject areas in their native language and also begin classes in English as a second language (ESL).
2. After students have acquired some English proficiency, instruction in English begins for one or two additional subject areas (perhaps math and science).
3. When it's clear that students can learn successfully in English in the subject areas identified in Step 2, they join their English-speaking classmates in regular classes in these subjects.
4. Eventually students are sufficiently proficient in English to join the mainstream in all subject areas, and they may no longer require their ESL classes (Krashen, 1996; Padilla, 2006; Valdés et al., 2005).

Ideally, the transition from instruction in a student's native language to instruction in English occurs very gradually over a period of several years. Simple knowledge of basic conversational English—knowledge collectively known as **basic interpersonal communication skills (BICS)**—isn't enough for academic success in an English-only curriculum. Ultimately, students must have sufficient mastery of English vocabulary and syntax that they can easily understand and learn from English-based textbooks and lectures; in other words, they must have **cognitive academic language proficiency (CALP)**. Such mastery of English takes considerable time to achieve—often 5 to 7 years (Carhill, Suárez-Orozco, & Páez, 2008; Cummins, 2000, 2008; Dixon et al., 2012; Padilla, 2006).

Why is immersion better for some students whereas bilingual education is better for others? As we've learned, language is an important foundation for cognitive development: Among other things, it provides symbols for mentally representing the world, enables children to exchange ideas with others, and helps them internalize sophisticated cognitive strategies. Students in an English-speaking country who are immersed in a different language at school still have many opportunities—not only at home but also with their friends and in the local community—to continue using and developing their English. In contrast, nonnative English speakers may have few opportunities outside their homes to use their native language. If they're taught exclusively in English, they may



To maximize second-language learning for native English speakers who live in an English-speaking country, completely immerse them in the second language for part or all of the school day.

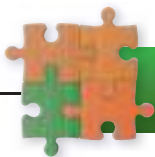


very well lose proficiency in their native language before developing adequate proficiency in English—a phenomenon known as **subtractive bilingualism**—and their cognitive development suffers as a result. Because bilingual education is designed to foster growth in *both* English and a child's native language, it's apt to promote cognitive development as well as English proficiency (Pérez, 1998; Tse, 2001; Winsler, Díaz, Espinosa, & Rodriguez, 1999).

We must remember that students' native languages are very much a part of their sense of identity—their sense of who they are as people (Nieto, 1995; Tatum, 1997). A high school student named Marisol made the point this way:

I'm proud of [being Puerto Rican]. I guess I speak Spanish whenever I can. . . . I used to have a lot of problems with one of my teachers 'cause she didn't want us to talk Spanish in class and I thought that was like an insult to us, you know? (Nieto, 1995, p. 127)

Incorporating children's cultural backgrounds as well as their native language into the classroom curriculum can further promote their academic success (Igoa, 1995, 2007; U.S. Department of



## Into the Classroom

### Working with English Language Learners

- Teach early reading skills in students' native languages.**  
When working with students whose families recently immigrated from Mexico, a first-grade teacher teaches basic letter-sound relationships and word decoding skills in Spanish (e.g., showing how the printed word *dos*, meaning "two," can be broken up into the sounds "duh," "oh," and "sss").
- If you don't speak a student's native language yourself, recruit and train parents, community volunteers, or other students to assist in providing instruction in that language.**  
A boy in a kindergarten class has grown up speaking Hmong, a language spoken in some Asian immigrant communities in the United States. His teacher recruits a fourth grader who can read an English picture book to the boy and translate it into Hmong. At one point the teacher points to a lily pad on a page of the book and asks the fourth grader to describe a lily pad in Hmong, as the boy has never encountered lily pads in his own life.
- Use bilingual software.**  
Conducting a quick Google search using the key terms *bilingual*, *educational*, and *software*, a teacher finds many educational software programs with both English and Spanish options, including some free programs he can easily download to his classroom computers.
- When using English to communicate, speak more slowly than you might otherwise, and clearly enunciate each word.**  
A third-grade teacher is careful that he always says "going to" rather than "gonna" and "want to" rather than "wanna."
- Use visual aids to supplement verbal explanations.**  
A high school history teacher uses photographs she has downloaded from the Internet to illustrate her verbal description of

ancient Egypt. She also gives students a one-page outline that identifies the main ideas in her lesson.

- During small-group learning activities, encourage same-language students to communicate with one another in their native language.**  
When a high school science teacher breaks students into cooperative groups to study the effects of weight, length, and amount of push on a pendulum's oscillation rate, she puts three native Chinese speakers in a single group. She suggests that they can talk in either English or Chinese as they conduct their experiments.
- Encourage—but don't force—students to contribute to class discussions in English; be understanding of students who are initially reluctant to participate.**  
A high school social studies teacher often breaks his class into small groups to discuss controversial social and political issues. He intentionally places two recent immigrants with peers who are likely to be supportive as these English language learners struggle in their efforts to communicate.
- Have students work in pairs to make sense of textbook material.**  
As two middle school students read a section of their geography textbook, one reads aloud while the other listens and takes notes. They frequently stop to talk about what they've just read or to switch roles.
- Have students read, write, and report about their native countries; also have them create art that depicts aspects of their countries and cultures.**  
A middle school social studies teacher has students conduct research on a country from which they or their ancestors emigrated. The students create posters to display what they've learned, and they proudly talk about their posters at a class-sponsored International Day that students from other classes attend.

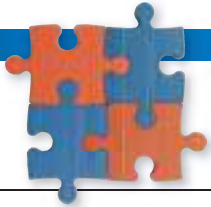
Education, 1993). The strategies in the Into the Classroom feature “Working with English Language Learners” take language, sense of identity, and culture into account.

#### MyEdLab Self-Check 2.5

**MyEdLab Application Exercise 2.5.** In this exercise you will identify some of the challenges that English language learners face, as well as the many strengths on which they might build.



## 2



## What Have You Learned?

As a way of summing up our discussion of development in this chapter, we now return to the learning outcomes identified at the beginning of the chapter.

■ **2.1: Describe four principles portraying the general nature of child development and the interactive roles of heredity and environment in guiding it.** Children develop skills and abilities in a somewhat predictable sequence, but they don’t all develop at the same rate, and their development in any particular domain is apt to show occasional spurts within periods of slower growth. To some degree, children’s developing physical, cognitive, personal, and social characteristics depend on maturation—that is, on a genetically driven unfolding of physiological advancements. But equally critical is an environment that nurtures and supports the acquisition of new knowledge and skills. As is evident in Urie Bronfenbrenner’s bioecological systems theory, children grow up within the context of several layers of environmental influence, some of which impact them directly (as is true for family and school environments) and others of which have indirect effects on their development (as is true for parents’ employment circumstances and general government policies); each of these layers reflects the particular practices and beliefs of one or more cultural groups. At the same time, children also *change* their environment—and thus also change how their environment affects them—in part by eliciting certain kinds of behaviors from others and in part by choosing among the various opportunities and activities that come their way.

■ **2.2: Explain how the brain and its development influence children’s thinking and learning.** The human brain changes in significant ways throughout childhood, adolescence, and early adulthood, partly as a result of environmental experiences and partly as a result of such genetically driven processes as synaptogenesis, synaptic pruning, and myelination. Although different parts of the brain have different specialties, they are closely interconnected and all work together to support complex human activities. The brain has considerable *plasticity*—that is, it can learn a great many new things at virtually any age. As teachers, we should be optimistic that students can acquire a wide variety of knowledge and skills in both the elementary and secondary grades. Yet we must keep in mind that even at the high school level, many students’ brains haven’t sufficiently matured to support planning, reasoning,

impulse control, and other abilities important for independent learning and responsible behavior.

■ **2.3: Apply Piaget’s theory of cognitive development to classroom practice.** Swiss psychologist Jean Piaget proposed that children are intrinsically motivated to make sense of their world and self-construct increasingly complex understandings of it through the two complementary processes of assimilation and accommodation. His four stages of cognitive development give us a rough idea of when various logical thinking capabilities are likely to emerge; however, most contemporary developmental theorists believe that children’s developmental progress can probably be better characterized as gradual trends that depend at least partly on children’s specific informal experiences and formal instruction.

Piaget’s theory has numerous implications for classroom practice. For example, his clinical method offers a way of exploring children’s reasoning processes in depth. His proposal that abstract thinking doesn’t appear until adolescence encourages us to make heavy use of concrete, hands-on experiences in the elementary and middle school grades. And his concept of disequilibrium suggests that by challenging students’ illogical reasoning, we can sometimes spur them to revise incomplete understandings and think in more sophisticated ways.

■ **2.4: Apply Vygotsky’s theory of cognitive development to classroom practice.** In contrast to Piaget, who portrayed children as being largely in control of their own cognitive development, Russian psychologist Lev Vygotsky proposed that children’s cognitive development is a very social enterprise. In particular, adults and other more advanced individuals communicate the meanings their culture assigns to objects and events, pass along physical and cognitive tools that make everyday tasks and problems easier, and assist children with tasks within each child’s zone of proximal development. In Vygotsky’s view, social activities are often precursors to and form the basis for complex mental processes: Children initially use new skills in the course of interacting with adults or peers and slowly internalize and adapt these skills for their own, independent use.

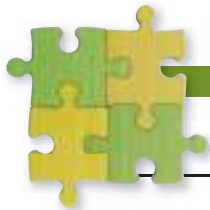
Vygotsky’s theory suggests that, as teachers, we should help students make sense of their experiences (e.g., by tying their observations to particular scientific concepts and principles), assign activities that require them to stretch their existing abilities, scaffold their efforts on challenging new tasks,

and have them occasionally work in small groups to tackle multifaceted issues and problems.

**2.5: Describe developmental changes in language during the school years, and explain how you might adapt instruction to children with diverse linguistic abilities and needs.**

By the time they reach kindergarten, most children have considerable proficiency in their native language. Nevertheless, their language development continues throughout the school years. For example, in addition to acquiring an ever-expanding vocabulary, children become increasingly able to listen effectively, conduct sustained conversations about particular topics, and comprehend the underlying meanings of figurative speech.

Both hereditary and environmental factors contribute to language development. One important environmental variable is, of course, the particular language—or languages—that children speak at home and in their communities. Researchers have identified many advantages to knowing two or more languages, including more advanced metalinguistic awareness, more creative thinking, and greater cross-cultural understanding. Different approaches to promoting bilingualism are recommended in different situations. In an English-speaking community, native English speakers can gain fluency in a second language through complete or partial immersion in that language at school, but students who speak a language other than English at home typically achieve at higher levels in bilingual education programs.



## Practice For Your Licensure Exam

### A Floating Stone

After lunch one day, first-grade teacher Mr. Fox calls his students to the carpet area so that he can show them a “curious thing.” Once the children are all seated and attentive, he puts a large fishbowl in front of them and fills it with water. Then, out of his jacket pocket, he pulls a piece of granite a little smaller than a golf ball and holds the stone over the bowl.

“What’s going to happen when I drop this stone into the water?” he asks the children. “Do you think it will float like a boat does?”

Several of the children shout, “No, it’s gonna sink!” Mr. Fox drops the stone into the water, and, sure enough, it sinks.

“You were right,” Mr. Fox says. “Hmm, I have another stone in my pocket.” He pulls out a much larger one—in this case, a piece of pumice (cooled lava) that is filled with tiny air pockets. “When I was traveling last summer, I found this at the bottom of an old volcano. Do you think this one will sink like the other one did?”

The children declare that it will definitely sink. Mr. Fox drops it into the fishbowl, where it momentarily submerges and then floats to the surface. “Hmm, what just happened?” he says as he looks inquisitively at his class.

Many of the children gasp with surprise. When a girl named Cora insists, “You didn’t do it right!” Mr. Fox retrieves the pumice and drops it in the water again, with the same result. “No, no, that’s impossible!” Cora yells. “Stones always sink—*always!*” She rubs and shakes her head, almost as if she’s a bit upset. (Case based on similar lesson described by Hennessey & Beeth, 1993.)

**1. Constructed-response question:**

Cora is noticeably surprised and possibly upset when she sees the pumice float.

- A. Use one or more concepts from Jean Piaget’s theory of cognitive development to explain why Cora reacts as strongly as she does to the floating pumice.
- B. Again drawing on Piaget’s theory, explain why Mr. Fox intentionally presents a phenomenon that will surprise the children.

**2. Multiple-choice question:**

Imagine that you perform the same demonstration with high school students rather than first graders. If you were to make use of Vygotsky’s theory of cognitive development, which one of the following approaches would you be most likely to take in helping the students understand the floating pumice?

- a. Before performing the demonstration, ask students to draw a picture of the fishbowl and two stones.
- b. Drop several light objects (e.g., a feather, a piece of paper, a small sponge) into the fishbowl before dropping either stone into it.
- c. Teach the concept of *density*, and explain that an object’s average density relative to water determines whether it floats or sinks.
- d. Praise students who correctly predict that the larger stone will float, even if they initially give an incorrect explanation about why it will float.

MyEdLab Licensure Exam 2.1

**PRAXIS** Go to Appendix C, “Matching Book Content to the Praxis Principles of Learning and Teaching Tests,” to discover sections of this chapter that may be especially applicable to the Praxis tests.



Monkey Business/Fotolia

# 3

## Personal and Social Development

### Learning Outcomes



- 3.1** Describe the nature and origins of children’s temperaments and personality characteristics, and explain how you might adapt your classroom practices to students’ diverse personalities.
- 3.2** Explain how students’ sense of self is apt to influence their behavior and how you can help students develop healthy self-perceptions.
- 3.3** Apply your knowledge of peer relationships and social cognition as you identify strategies for promoting productive social skills and addressing student aggression.
- 3.4** Describe typical advancements in moral and prosocial development over the course of childhood and adolescence, and identify strategies for promoting moral and prosocial development at school.

## CASE STUDY: HIDDEN TREASURE

Six-year-old Lupita has spent most of her life in Mexico with her grandmother, but she recently joined her migrant-worker parents in the United States and is now a quiet, well-behaved student in Ms. Padilla's kindergarten class. Ms. Padilla rarely calls on her because of her apparent lack of academic skills and is thinking about holding her back for a second year of kindergarten. Yet a researcher's video camera captures a side of Lupita her teacher hasn't noticed. On one occasion Lupita is quick to finish her Spanish assignment and starts to work on a puzzle during her free time. A classmate approaches, and he and Lupita begin playing with a box of toys. A teacher aide asks the boy whether he has finished his Spanish assignment, implying that he should return to his seat to complete it, but the boy doesn't understand the aide's subtle message. Lupita gently persuades the boy to finish his schoolwork and then returns to her puzzle. Two classmates having trouble with their own puzzles request Lupita's assistance, and she patiently shows them how to work cooperatively to assemble the pieces.

Ms. Padilla is amazed when she views the video. She readily admits, "I had written her off—her and three others. They had met my expectations [for low achievement] and I just wasn't looking for anything else." Ms. Padilla and her aides begin working closely with Lupita on academic skills and often allow her to take a leadership role in group activities. At the end of the school year, Lupita earns achievement test scores indicating exceptional competence in language and math, and she is promoted to first grade. (Based on case described by Carrasco, 1981)

- What distinctive personality characteristics and social skills does Lupita exhibit? Which of them are likely to enhance her classroom success? Which of them might potentially interfere with her classroom success?
- What might have happened to Lupita if her many strengths had gone unnoticed?



Lupita's behaviors during free time reveal a conscientious, socially astute child with strong teaching and leadership skills. However, perhaps because of Lupita's quiet, restrained nature—or perhaps because of her family background—Ms. Padilla initially concludes that Lupita hasn't mastered the knowledge and skills she'll need in first grade. If the researcher's video hadn't captured Lupita's social skills and proficiency and persistence with puzzles, Lupita might very well have remained on the sidelines throughout much of the school year, getting little assistance on academic skills and few opportunities to capitalize on her many positive personal qualities. Thus, Ms. Padilla's low expectations for Lupita may have ensured that Lupita *wouldn't* gain the knowledge and skills she would need in first grade—a self-fulfilling prophecy.

School isn't just a place for acquiring cognitive and linguistic skills. It's also a place for **personal development**, whereby children and adolescents continue to develop their emerging personality traits and gain an increasing understanding of who they are as individuals. Furthermore, the very social nature of school makes it an ideal context for **social development**, in which young people come to better understand their fellow human beings, develop productive social skills and interpersonal relationships, and gradually internalize their society's standards for behavior.

## CHAPTER OUTLINE

### Personality Development

Temperament

Environmental Influences on Personality Development

The "Big Five" Personality Traits

Temperament, Personality, and Goodness of Fit

### Development of a Sense of Self

Factors Influencing Sense of Self  
Developmental Changes in Sense of Self

Diversity in Sense of Self

### Development of Peer

Relationships and Interpersonal Understandings

Roles of Peers in Children's Development

Common Social Groups in Childhood and Adolescence

Popularity and Social Isolation

Social Cognition

Aggression

Technology and Peer Relationships

Diversity in Peer Relationships and Social Cognition

Promoting Healthy Peer Relationships

### Moral and Prosocial Development

Developmental Trends in Morality and Prosocial Behavior

Factors Influencing Moral and Prosocial Development

Diversity in Moral and Prosocial Development

Encouraging Moral and Prosocial Development at School

## Personality Development

All of us have unique qualities that make us different from the people around us. Our distinctive ways of behaving, thinking, and feeling comprise our **personalities**. For example, whereas Lupita tends to be quiet and well behaved in class, some of her peers are probably noisy and rambunctious. And whereas Lupita is conscientious about completing her work, we might reasonably guess that some of her classmates are easily distracted and must be prodded to stay on task.

Children's personalities are the result of both heredity—especially in the form of inherited temperaments—and environmental factors. As you will see, heredity and environment often interact in their influences.

### TEMPERAMENT

A child's **temperament** is his or her general tendency to respond to and deal with environmental stimuli and events in particular ways. Children seem to have distinct temperaments almost from birth. Researchers have identified many temperamental styles that emerge early in life and are relatively enduring, including general activity level, adaptability, self-control, persistence, adventurousness, outgoingness, shyness, fearfulness, irritability, and distractibility. Most psychologists agree that such temperamental differences are biologically based and have genetic origins, and to some degree the differences persist into adolescence and adulthood (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Keogh, 2003; Rothbart, 2011; A. Thomas & Chess, 1977).

By influencing children's behaviors, inherited temperaments also influence the specific environmental circumstances they experience and so indirectly affect other aspects of personal and social development (N. A. Fox, Henderson, Rubin, Calkins, & Schmidt, 2001; Rothbart, 2011; Strelau, 2008). For example, children who are energetic and adventuresome seek out a wider variety of experiences than those who are quiet and restrained. And children who are naturally vivacious and outgoing typically have more opportunities to learn social skills and establish rewarding interpersonal relationships—including good relationships with their teachers—than do children who are subdued and shy.

Furthermore, many temperamental characteristics affect how students engage in and respond to classroom activities and thus indirectly affect their academic achievement (Keogh, 2003; A. J. Martin, Nejad, Colmar, & Liem, 2013; Saudino & Plomin, 2007). For instance, students are more likely to achieve at high levels if they are persistent, reasonably (but not overly) energetic, and able to ignore minor distractions. They can also achieve greater academic success if their behaviors lead to friendly, productive relationships with teachers and peers—people who can bolster their self-confidence and support their efforts to learn. Underlying some of their academic and social success is an aspect of temperament known as **effortful control**—their general ability to inhibit immediate impulses in order to think and act productively (Rothbart, 2011; Valiente, Lemery-Chalfant, & Swanson, 2010).

### ENVIRONMENTAL INFLUENCES ON PERSONALITY DEVELOPMENT

Genetic differences in temperament are only *predispositions* to behave in certain ways, and environmental conditions and experiences point different children with the same predispositions in somewhat different directions. Two key environmental factors influencing personality development are family dynamics and cultural expectations for behavior.

#### FAMILY DYNAMICS

Many parents and other family caregivers (e.g., grandparents, older siblings) lovingly interact with a new infant and consistently and dependably provide for the infant's physical and psychological needs. When they do such things, a strong, affectionate caregiver-child bond known as **attachment** typically forms (Ainsworth, Blehar, Waters, & Wall, 1978). Infants who become closely attached to parents or other caregivers early in life are apt to develop into amiable, independent, self-confident children and adolescents who adjust easily to new classroom environments, establish productive relationships with teachers and peers, and have an inner conscience that guides their behavior. In contrast, children who don't become closely attached to a parent or



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#### Video Example 3.1.

Even when all students are productively engaged in a classroom activity, they show temperamental differences in such traits as general energy level and assertiveness. For example, notice how some boys dominate this small-group activity in which several students experiment with a small water wheel.

some other individual early in life can be immature, dependent, unpopular, and prone to disruptive and aggressive behaviors later on (J. P. Allen, Porter, McFarland, McElhaney, & Marsh, 2007; Kochanska, Aksan, Knaack, & Rhines, 2004; Mikulincer & Shaver, 2005; S. Shulman, Elicker, & Sroufe, 1994; Sroufe, Carlson, & Shulman, 1993).

In addition to forming emotional attachments with children, parents and other family caregivers tend to adopt fairly consistent *parenting styles* they use in raising the children. In mainstream Western culture, the best situation for most children seems to be **authoritative parenting**, which combines affection and respect for children with reasonable restrictions on behavior. Authoritative parents provide a loving and supportive home, hold high expectations and standards for performance, explain why behaviors are or are not acceptable, enforce household rules consistently, include children in decision making, and provide age-appropriate opportunities for autonomy. Children from authoritative homes tend to be happy, energetic, self-confident, and likeable. They make friends easily and show self-control and concern for the rights and needs of others. Children of authoritative parents appear well adjusted, in part, because their behavior fits well with the values espoused by mainstream Western culture. They listen respectfully to others, follow reasonable rules for behavior, work well independently, and strive for academic achievement (Barber, Stolz, & Olsen, 2005; Baumrind, 1989, 1991; Bradley, 2010; M. R. Gray & Steinberg, 1999; J. M. T. Walker & Hoover-Dempsey, 2006). Given such benefits, authoritative parenting can provide a good model for how we, as teachers, should generally conduct our classrooms.

Authoritative parenting isn't universally "best," however. Certain other parenting styles may be better suited to particular cultures and environments. For instance, in **authoritarian parenting**, parents expect complete and immediate compliance; they neither negotiate expectations nor provide reasons for their requests. In many Asian American and Hispanic families, high demands for obedience are made within the context of close, supportive parent-child relationships. Underlying the message of control is a more important message: "I love you and want you to do well, but it's equally important that you act for the good of the family and community" (X. Chen & Wang, 2010; Halgunseth, Ispa, & Rudy, 2006; Rothbaum & Trommsdorff, 2007). Authoritarian parenting is also more common in impoverished economic environments. When families live in low-income, inner-city neighborhoods where danger potentially lurks around every corner, parents may better serve their children by being strict and directive about activities (Hale-Benson, 1986; McLoyd, 1998).

Some degree of parental guidance and discipline seems to be important for optimal personal and social development. Parents who are overly permissive—for instance, those who let their children come and go as they please and impose few consequences for inappropriate actions—tend to have children who are immature and impulsive, do poorly in school, and act aggressively toward peers (Aunola & Nurmi, 2005; Joussemet et al., 2008; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Yet we must be careful that we don't point accusatory fingers or in other ways be judgmental about how parents are bringing up their children. Some parents may have learned ineffective parenting strategies from their own parents. Others may have challenges in their lives—perhaps mental illness, marital conflict, or serious financial problems—that hamper their ability to nurture and support their children.

It's important to note, too, that most research on parenting involves correlational studies that reveal associations between parents' behaviors and children's characteristics but don't necessarily demonstrate cause-and-effect relationships. A few experimental studies have documented that specific parenting styles probably *do* influence children's personalities to some degree (Bakermans-Kranenburg, van IJzendoorn, Pijlman, Mesman, & Juffer, 2008; W. A. Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). In some cases, however, parents' disciplinary strategies seem to be the *result*, rather than the cause, of how children behave. For instance, temperamentally lively or adventuresome children typically require more parental control than quieter, restrained ones (J. R. Harris, 1998; Rothbart, 2011; Stice & Barrera, 1995).

As teachers, we can certainly serve as sources of information about effective disciplinary strategies. But we should keep in mind that parenting styles have, at most, only a *moderate* influence on children's personalities. Many children and adolescents thrive despite their caregivers' diverse parenting styles, provided that those caregivers aren't severely neglectful or abusive. Children with certain temperaments—for instance, those who tend to be adaptable, self-disciplined, and



In the classroom, convey reasonably high expectations and standards for behavior, but always within the context of affectionate and respectful relationships with students.



Serve as a resource regarding effective parenting strategies, perhaps through newsletters or parent discussion groups.

outgoing—seem to be especially resilient in the face of difficult family circumstances (Bates & Pettit, 2007; Belsky & Pluess, 2009; D. Hart, Atkins, & Fegley, 2003; Rothbart, 2011).

**Child maltreatment.** In a few unfortunate instances, parents' behaviors toward their children constitute **child maltreatment**. One form of child maltreatment is child *neglect*: Parents fail to provide nutritious meals, adequate clothing, and other basic necessities of life. In other cases parents or other family members *abuse* children physically, sexually, or emotionally. Possible indicators of neglect or abuse are chronic hunger, lack of warm clothing in cold weather, untreated medical needs, frequent or serious physical injuries (e.g., bruises, burns, broken bones), and exceptional knowledge about sexual matters.

Parental neglect and abuse can have significant adverse effects on children's personal and social development. On average, children who have been routinely neglected or abused have low self-esteem, poorly developed social skills, and low school achievement. Many are angry, aggressive, and defiant. Others can be depressed, anxious, socially withdrawn, and possibly suicidal (Crosson-Tower, 2010; J. Kim & Cicchetti, 2006; Maughan & Cicchetti, 2002; R. A. Thompson & Wyatt, 1999).

Teachers are both legally and morally obligated to report any cases of suspected child abuse or neglect to the proper authorities (e.g., the school principal or child protective services). Two helpful resources are the National Child Abuse Hotline at 1-800-4-A-CHILD (1-800-422-4453) and the website for Childhelp at [www.childhelp.org](http://www.childhelp.org).

### CULTURAL EXPECTATIONS AND SOCIALIZATION

As we've seen, various cultural groups influence children's personalities indirectly through the parenting styles they encourage. Culture also has a more direct influence on children's personal and social development through a process known as **socialization**. That is, members of a cultural group work hard to help growing children adopt the behaviors and beliefs that the group holds dear. Children typically learn their earliest lessons about their culture's expectations for behavior from parents and other family members, who teach them simple manners (e.g., saying please and thank you), encourage them to do well in school, and so on (W.-B. Chen & Gregory, 2008; Eccles, 2007). Once children reach school age, teachers become equally important socialization agents. For example, in mainstream Western society, teachers typically expect and encourage such behaviors as showing respect for authority figures, following rules and directions, controlling impulses, working independently, and asking for help when it's needed (Manning & Baruth, 2009; Wentzel & Looney, 2007). Cultures around the globe encourage many of these behaviors, but they don't necessarily endorse *all* of them. For instance, many children of Mexican heritage are more accustomed to observing events quietly and unobtrusively—as Lupita does in the opening case study—than to asking adults for explanations and help (Correa-Chávez, Rogoff, & Mejía Arauz, 2005; Gutiérrez & Rogoff, 2003).

Researchers have observed other cultural differences in socialization practices as well. For example, many European American families encourage children to think for themselves and be assertive in expressing their needs and opinions, but families from many other countries (e.g., Mexico, China, India) are more likely to encourage restraint, obedience, and deference to elders (Goodnow, 1992; Joshi & MacLean, 1994; Morelli & Rothbaum, 2007). And whereas many American children are encouraged to be outgoing and emotionally expressive, children in many Asian cultures are encouraged to be shy and emotionally reserved (X. Chen, Chung, & Hsiao, 2009; Huntsinger & Jose, 2006; Morelli & Rothbaum, 2007). However, considerable diversity exists *within* any culture, with different parents, teachers, and other adults encouraging somewhat different behaviors and beliefs.

When behaviors expected of students at school differ from those expected at home or when belief systems presented by teachers are inconsistent with those of children's parents, children may initially experience some **culture shock**. At a minimum, these children are apt to be confused and distracted, at least in the first few days or weeks of school. Some children with less adaptable or more irritable temperaments may even become angry or resistant (Rothbart, 2011; C. Ward, Bochner, & Furnham, 2001).

As teachers, we must certainly encourage behaviors essential for students' long-term success, such as obeying rules, following instructions, and working independently. At the same time, students will need our guidance, support, and patience when our expectations differ from those of their family or cultural group.

Chapter 5 describes possible warning signs that a student is contemplating suicide.



Report suspected cases of child maltreatment immediately.

Chapter 4 examines cultural differences such as these in greater depth.



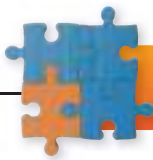
Teach students behaviors they will need for long-term success in Western society, but be patient when such behaviors are very different from those learned at home.



## THE “BIG FIVE” PERSONALITY TRAITS

As children grow older, the many interactions among their inherited temperaments and environmental circumstances lead to unique and somewhat stable personality profiles. Research with both children and adults has yielded five general personality traits that are relatively independent of one another and appear to involve somewhat different areas of the brain. You can remember them using the mnemonic *OCEAN*:

- *Openness*: The extent to which one is curious about the world and receptive to new experiences and ideas
- *Conscientiousness*: The extent to which one is careful, organized, self-disciplined, and likely to follow through on plans and commitments
- *Extraversion*: The extent to which one is socially outgoing and seeks excitement
- *Agreeableness*: The extent to which one is pleasant, kind, and cooperative in social situations
- *Neuroticism*: The extent to which one is prone to negative emotions (e.g., anxiety, anger, depression) (Caspi, 1998; DeYoung et al., 2010; A. J. Martin et al., 2013; G. Matthews, Zeidner, & Roberts, 2006)



## Creating a Productive Classroom Environment

### Accommodating Students' Diverse Temperaments and Personality Traits

#### Minimize downtime for students with high energy levels.

As a way of letting a chronically restless third grader release pent-up energy throughout the school day, his teacher gives him small chores to do (e.g., erasing the board, sharpening pencils, cleaning art supplies) and shows him how to complete the chores quietly so as not to disturb his classmates.

#### Provide many opportunities for highly sociable students to interact with classmates.

In a unit on colonial America, a fifth-grade teacher assigns a project in which students must depict a typical colonial village in some way (e.g., by writing a research paper, drawing a map on poster board, or creating a miniature three-dimensional model). The students can choose to work on the project alone or with one or two classmates, with the stipulation that students who work with peers must undertake more complex projects than students who work alone.

#### Be especially warm and attentive with very shy students, and identify contexts in which they feel comfortable interacting with peers and openly expressing their ideas.

A ninth-grade teacher has a new student join one of his classes midway through the school year. The student comes to class alone each day and doesn't join in conversations with peers before or after class. When the teacher sees her eating lunch by herself in the cafeteria one day, he sits beside her and engages her in conversation about her previous school and community. The following day in class, he assigns a small-group, cooperative learning project that students will work on periodically over the next 2 weeks. He forms cooperative groups of three or four students each, making sure to place the new girl with two students who he knows will be friendly and helpful to her.

#### When students have trouble adapting to new circumstances, give them advance notice of unusual activities and provide extra structure and reassurance.

A kindergarten teacher has discovered that two children in his class do well when the school day is orderly and predictable but often become anxious or upset when the class departs from its usual routine. To prepare the children for a field trip to the fire station on Friday, the teacher begins to talk about the trip at the beginning of the week, explaining what the class will do and see during the visit. He also recruits the father of one of the anxiety-prone children to serve as a parent assistant that day.

#### If students seem overwhelmed by noisy or chaotic situations, locate or create a more calm and peaceful environment for them.

Several middle school students find the school cafeteria loud and unsettling. Their math teacher offers her classroom as a place where they can occasionally eat instead. On some days she eats with them. At other times she sits at her desk and grades papers, but the students know she will gladly stop to talk if they have a question or concern.

#### Teach self-control strategies to students who act impulsively.

A high school student often shouts out comments and opinions in her history class. One day the student's teacher takes her aside after school and gently explains that her lack of restraint is interfering with classmates' ability to participate in discussions. To sensitize the student to the extent of the problem, the teacher asks her to keep a daily tally of how many times she talks without first raising her hand. A week later the two meet again, and the teacher suggests a quiet self-talk strategy that can help the student participate actively without dominating a discussion.



Remember that despite some consistency in students' personalities, their behaviors are likely to vary somewhat in different contexts.

Personality traits such as the “Big Five” lead to some consistency—but not *total* consistency—in children's behaviors across situations (Hampson, 2008; Mendoza-Denton & Mischel, 2007). Variability is particularly common when circumstances change considerably. For instance, a student might be very outgoing and sociable with his close friends but shy and withdrawn with people he doesn't know very well. And a student is more likely to be conscientious about completing homework if she is given some guidance about how to organize her assignments in a “to-do” list.

## TEMPERAMENT, PERSONALITY, AND GOODNESS OF FIT

On average, students who are conscientious about their work and open to new experiences achieve at higher levels at school (Hattie, 2009; A. J. Martin et al., 2013; M. C. O'Connor & Paunonen, 2007). Yet there is no single best temperament or personality that maximizes students' adjustment and achievement in the classroom. Instead, children are more likely to succeed at school when there is a **goodness of fit**—rather than a mismatch—between their natural inclinations and typical behaviors, on the one hand, and classroom activities and expectations, on the other (A. Thomas & Chess, 1977). For example, when teachers want students to participate actively in whole-class discussions, highly energetic, outgoing children are apt to shine, but quieter students (like Lupita) might feel anxious or intimidated. When teachers require a lot of independent seatwork, quieter children often do well, but some energetic children may be viewed as disruptive (Keogh, 2003; Rothbart, 2011).

As teachers, we must keep in mind that students' distinctive ways of behaving in the classroom—their energy levels, sociability, impulsiveness, and the like—aren't entirely within their control. The Creating a Productive Classroom Environment feature “Accommodating Students' Diverse Temperaments and Personality Traits” offers several suggestions for adapting instruction and classroom management strategies to accommodate students' individual behavioral styles.

### MyEdLab Self-Check 3.1

**MyEdLab Application Exercise 3.1.** In this interactive exercise, you can practice applying what you have learned about temperament and goodness of fit.

## Development of a Sense of Self

With their increasing capacity for symbolic thinking and (eventually) abstract reasoning, growing children begin to draw conclusions about who they are as people. As an example, try the following exercise.

### EXPERIENCING FIRSTHAND

#### DESCRIBING YOURSELF

List at least 10 words or phrases that describe you as a person.

How did you describe yourself? Are you smart? Friendly? Open-minded? Physically attractive? Moody? Your answers provide a window into a key component of your personality known as **sense of self**—your perceptions, beliefs, judgments, and feelings about who you are as a person. Many psychologists distinguish between two aspects of the sense of self: *self-concept*—assessments of one's own characteristics, strengths, and weaknesses—and *self-esteem*—judgments and feelings about one's own value and worth. These two aspects closely overlap, however, and thus the two terms are often used interchangeably (Bracken, 2009; Byrne, 2002; McInerney, Marsh, & Craven, 2008).

In overall self-assessments, young children tend to make distinctions between two general domains: how competent they are at day-to-day tasks (including schoolwork) and how much their family and friends like them. As they grow older, children make finer and finer distinctions—for instance, they realize that they may be more or less competent or “good” in various academic subjects, athletic activities, peer relationships, and physical attractiveness (Arens, Yeung, Craven, & Hasselhorn, 2011; Davis-Kean & Sandler, 2001; Harter, 1999). Each of these domains may have a greater or lesser influence on students' overall sense of self. For some students, academic

achievement may be the overriding factor, whereas for others, physical attractiveness or popularity with peers may be more important (Crocker & Knight, 2005; D. Hart, 1988; Harter, 1999).

Children and adolescents tend to behave in ways that mirror their beliefs about themselves (M. S. Caldwell, Rudolph, Troop-Gordon, & Kim, 2004; Marsh & O'Mara, 2008; Valentine, DuBois, & Cooper, 2004). For instance, if they see themselves as good students, they're more likely to pay attention, follow directions, persist at difficult problems, and enroll in challenging courses. If they see themselves as friendly and socially desirable, they're more likely to seek the company of their classmates and perhaps run for student council. If they see themselves as physically skillful, they'll more eagerly pursue extracurricular athletics.

Students' beliefs about themselves are, like their beliefs about the world around them, largely self-constructed. Accordingly, their self-assessments may or may not be accurate. When students evaluate themselves fairly accurately, they're in a good position to choose age-appropriate tasks and activities (Baumeister, Campbell, Krueger, & Vohs, 2003; Harter, 1999). A slightly inflated self-assessment can be beneficial as well, because it encourages students to work toward challenging yet potentially reachable goals (Bjorklund & Green, 1992; Pajares, 2009). However, a sense of self that is *too* inflated can give some students an unwarranted sense of superiority over classmates and lead them to bully or in other ways act aggressively toward peers (Baumeister et al., 2003; Baumeister, Smart, & Boden, 1996; Menon et al., 2007). And as you might guess, students who significantly *underestimate* their abilities are apt to avoid the many challenges that would enhance their cognitive and social growth (Schunk & Pajares, 2004; Zimmerman & Moylan, 2009).

## FACTORS INFLUENCING SENSE OF SELF

Students often gain initial insights about their general competence in a certain domain from their *own successes and failures* in that domain (Chiu, 2012; Marsh & O'Mara, 2008). For instance, they may discover that they can easily solve—or, instead, consistently struggle with—simple math problems. Or they may find that they can run faster—or more slowly—than most of their peers. Through such experiences, students acquire a sense of **self-efficacy** about the degree to which they can succeed in certain activities and accomplish certain goals. Over time, students' specific self-efficacies for various tasks and activities contribute to their more general sense of self (Bong & Skaalvik, 2003; McInerney et al., 2008).

Unfortunately, an interplay between self-perceptions and behaviors can create a vicious cycle: A poor sense of self leads to less productive behaviors, which leads to fewer successes, which perpetuates the poor sense of self. However, simply telling students that they're good or smart or in some other way "special" is unlikely to break the cycle (Brummelman, Thomaes, Orobio de Castro, Overbeek, & Bushman, 2014; McMillan, Singh, & Simonetta, 1994; Pajares, 2009). Instead, we must make sure that students have many opportunities to improve and eventually succeed at academic, social, and physical tasks—not obviously easy tasks (which presumably anyone could do) but challenging ones that reflect a genuine sense of accomplishment. When we present such challenges, we must, of course, be sure that students have the prerequisite knowledge and scaffolding they need to be successful (Bouchey & Harter, 2005; Dunning, Heath, & Suls, 2004; Leary, 1999).

Yet students' personal successes and failures aren't the only things affecting their sense of self. A second important factor is students' social context—and more specifically, *other people's behaviors*—which influences their self-perceptions in at least two ways. For one thing, how students evaluate themselves depends to some extent on how their own performance compares to that of their peers. For example, students who see themselves achieving at higher levels than classmates are apt to develop a more positive sense of self than those who consistently find themselves falling short (R. Butler, 2008; Liem, Marsh, Martin, McInerney, & Yeung, 2013; Trautwein, Gerlach, & Lüdtke, 2008). Thus, peer comparisons can dampen high-ability students' sense of self when they attend classes made up largely of students with similarly high ability (Chiu, 2012; Seaton, Marsh, & Craven, 2010).

In addition, students' self-perceptions are affected by how others behave *toward* them. Peers often communicate information about children's social and athletic competence, perhaps by seeking out a child's companionship or ridiculing a child in front of others (M. S. Caldwell et al., 2004; Crosnoe, 2011; Rudolph, Caldwell, & Conley, 2005). Adults, too, influence children's sense



Enhance students' sense of self indirectly by supporting their efforts to meet new challenges.



Minimize competitive situations in which students might compare themselves unfavorably with peers, and present any negative feedback within the context of an optimistic message about future performance.

Chapter 11 describes more specific effects of teacher expectations.



Get students actively involved in successful group activities.

of self, in part by the kinds of expectations they hold for children's performance and in part by drawing attention to various things children do well or poorly (M. J. Harris & Rosenthal, 1985; O'Mara, Marsh, Craven, & Debus, 2006; Pajares, 2009). As teachers, we should, of course, communicate realistically high expectations for achievement and give positive feedback about the specific things students do well. And when we find that we must give students negative feedback—and occasionally we must—we should do so while also communicating optimism about their future performance. For instance, we might point out that mistakes are a natural part of the learning process, and we should offer concrete suggestions about how to improve.

A third general factor that can impact students' sense of self is *membership in a successful group* (Harter, 1999; Thorkildsen, Golant, & Cambrey-Engstrom, 2008; Wigfield, Eccles, & Pintrich, 1996). If you think back to your own school years, perhaps you can recall taking pride in something your entire class accomplished or feeling good about a community service project completed through an extracurricular club. School groups aren't the only groups affecting students' sense of self. For instance, some cultures encourage children to take pride in the accomplishments of their families as well as—or perhaps instead of—their own accomplishments (Banks & Banks, 1995; P. M. Cole & Tan, 2007). And as we'll see a bit later in the chapter, students' membership in certain ethnic groups can also be a source of pride.

## DEVELOPMENTAL CHANGES IN SENSE OF SELF

We've already seen one way in which self-perceptions change with age: Children increasingly differentiate among the many aspects of who they are as people—their academic abilities, physical qualities, social relationships, and so on. But children's and adolescents' beliefs and feelings about themselves change in other ways as well. One early personality theorist, Erik Erikson, proposed that people's personalities and sense of self continue to evolve throughout the life span in a predictable sequence of *psychosocial stages*, described in Figure 3.1. However, our focus in the upcoming sections will be on what more contemporary researchers have learned about developmental changes in children's and adolescents' sense of self.

**Childhood** Elementary school children tend to think of themselves in terms of concrete, easily observable characteristics and behaviors, such as their age, sex, and favorite activities (D. Hart, 1988; Harter, 1983). In racially and culturally diverse communities, where different skin colors, languages, and customs are obvious, children may also classify themselves as belonging to one or another racial or ethnic group (Phinney, 1990; Sheets, 1999). For instance, when she was in second grade, 7-year-old Tina drew the self-portrait shown in Figure 3.2. As a girl with a Native American and Hispanic genetic heritage, she was clearly aware that her hair and skin tone were darker than those of most of her classmates.

Most young children have a generally positive sense of self. Sometimes they believe they're more capable than they really *are* and that they can easily overcome initial failures (R. Butler, 2008; Lockhart, Chang, & Story, 2002; Robins & Trzesniewski, 2005). As children have more opportunities to compare themselves with peers during the elementary grades and as they become cognitively more able to *make* such comparisons, their self-assessments become increasingly realistic (R. Butler, 2008; J. W. Chapman, Tunmer, & Prochnow, 2000; Davis-Kean et al., 2008). They also begin to pull together their many self-observations into generalizations about the kinds of people they are—perhaps friendly, good at sports, smart, or dumb—and such generalizations lead to the development of increasingly stable self-concepts (D. A. Cole et al., 2001; Harter, 1999).

**Early adolescence** As students reach adolescence and gain greater capability for abstract thought, they increasingly think of themselves in terms of general, fairly stable traits. Consider 12-year-old Tina's self-description in sixth grade:

I'm cool. I'm awesome. I'm way cool. I'm 12. I'm boy crazy. I go to Brentwood Middle School. I'm popular with my fans. I play viola. My best friend is Lindsay. I have a gerbil named Taj. I'm adopted. I'm beautiful.

Although Tina listed a few concrete features, she had clearly developed a fairly abstract self-perception. Her focus on coolness, popularity, and beauty, rather than on intelligence or academic



Remember that a student's sense of self becomes increasingly stable with age. Especially in the upper elementary and secondary grades, then, enhancing a student's low self-esteem may take time and persistence.

**FIGURE 3.1** Erikson's eight stages of psychosocial development**Overview of Erikson's Stages**

Erik Erikson (1963, 1972) proposed that people proceed through eight distinct stages over the course of their lives. Each stage presents a unique developmental task, and how a person addresses it influences her or his general mental health and progress through later stages.

**Trust versus mistrust (infancy).** According to Erikson, the major developmental task in infancy is to learn whether other people, especially primary caregivers, regularly satisfy basic needs. If caregivers are consistent sources of food and comfort, an infant learns *trust*—that others are dependable and reliable. If caregivers are neglectful or abusive, the infant learns *mistrust*—that the world is an undependable, unpredictable, and possibly dangerous place.

**Autonomy versus shame and doubt (toddler years).** As toddlers gain increasing muscular control, they begin to satisfy some of their own needs—for example, by feeding and dressing themselves. If caregivers encourage self-sufficient behavior, toddlers develop a sense of *autonomy*—a sense of being able to handle many problems on their own. But if caregivers demand too much too soon or, in contrast, restrict or ridicule early attempts at self-sufficiency, children may instead develop *shame and doubt* about their abilities.

**Initiative versus guilt (preschool years).** With their growing independence, preschoolers have many choices about the activities they pursue. If parents and preschool teachers encourage and support children's efforts while also helping them make realistic and appropriate choices, children develop *initiative*—independence in planning and undertaking activities. But if, instead, adults discourage the pursuit of independent activities or else dismiss them as silly and bothersome, children develop *guilt* about their needs and desires.

**Industry versus inferiority (elementary school years).** Elementary school provides many opportunities for children to achieve the recognition of teachers, parents, and peers by producing things—drawing pictures, writing short stories, and so on. If children are encouraged to make and do things and then praised for their accomplishments, they begin to demonstrate *industry* in that they diligently pursue and persist at certain tasks and often put work before pleasure. If they are instead punished for their efforts or if they find they are incapable of meeting others' expectations, they develop a sense of *inferiority* about their capabilities.

**Identity versus role confusion (adolescence).** Adolescents begin to ponder the roles they might play in the adult world. Initially, they're apt to experience some *role confusion*—mixed ideas and feelings about the specific ways in which they will fit into society—and may experiment with a variety of behaviors and activities (e.g., tinkering with cars, babysitting for neighbors, affiliating with certain religious groups). Erikson proposed that eventually most adolescents achieve a sense of *identity* regarding who they are and where their lives are headed.

**Intimacy versus isolation (young adulthood).** In Erikson's view, once young people have established their identities, they're ready to make long-term social commitments. Many become capable of

*intimacy*, forming one or more reciprocal relationships that involve compromise and self-sacrifice. People who can't form intimate relationships—perhaps because they have trouble putting aside their own needs—develop a sense of *isolation*.

**Generativity versus stagnation (middle age).** During middle age the primary developmental task is one of contributing to society and helping to guide future generations. When a person makes a contribution during this period, he or she feels a sense of *generativity*—a sense of productivity and accomplishment. In contrast, a person who is self-centered and unable or unwilling to help society move forward develops a feeling of *stagnation*—a dissatisfaction with his or her relative lack of productivity.

**Integrity versus despair (retirement years).** As people reach retirement, they look back on their lives and accomplishments. If they believe that they've led a happy, productive life, they gain feelings of contentment and *integrity*. But if they look back on a life of disappointments and unachieved goals, they may develop a sense of *despair*.

**Critiquing Erikson's Theory**

Erikson's theory reminds us that development is a life-long process: Children and adults alike have new things to learn and new challenges to meet. At the same time, his theory has shortcomings. First, Erikson drew his ideas largely from personal anecdotes rather than systematic research (Crain, 2005). Second, he based his stages primarily on work with men; for many women, a focus on intimacy emerges either before or in conjunction with a focus on identity (Josselson, 1988). And third, Erikson didn't take into account the important role that culture plays in development. Many cultures intentionally discourage autonomy, initiative, and self-assertiveness in young children, sometimes as a way of protecting children from the very real dangers of their environments (X. Chen et al., 2009; Harwood, Miller, & Irizarry, 1995; G. J. Powell, 1983).

As teachers, we should keep in mind that the age ranges for accomplishing Erikson's eight developmental tasks are probably broader than Erikson proposed. For instance, most people probably don't achieve a sense of identity as early or as easily as Erikson suggested (see the discussion of identity in the section "Late Adolescence"). Nevertheless, the first five stages have implications for us as teachers, who must work hard to do the following:

- Help students overcome early difficulties with trust, autonomy, or initiative—in particular, by being reliable sources of affection and support (trust) and by giving students age-appropriate opportunities to work independently (autonomy) and undertake self-chosen activities (initiative).
- Promote a sense of industry by engaging students in meaningful tasks and completing worthwhile projects.
- Help adolescents in their search for identity by providing opportunities to explore various roles they might play in adult society.

achievement (or, we might add, modesty), is fairly typical: Social acceptance and physical appearance are far more important to many young adolescents than academic competence (D. Hart, 1988; Harter, 1999).

Students' self-concepts and self-esteem often drop as they make the transition from elementary school to middle school or junior high, with the drop being more pronounced for girls (D. A. Cole et al., 2001; Harter, 1999; Robins & Trzesniewski, 2005). The physiological changes accompanying puberty may be a factor: Many boys and girls think of themselves as being somewhat less attractive once they reach adolescence (S. Moore & Rosenthal, 2006; Stice, 2003). Changes in the



**FIGURE 3.2** As early as the primary grades, students in racially diverse communities have some awareness of their membership in a particular racial group. Notice how 7-year-old Tina portrays herself as having darker hair and skin than the classmates behind her.

school environment—including disrupted friendships, more superficial teacher–student relationships, and more rigorous academic standards—probably also have a negative impact.

Also with early adolescence come two new phenomena with implications for sense of self. First, students become more cognitively able to reflect on how others might see them (Harter, 1999). They may initially go to extremes, thinking that in any social situation everyone else’s attention is focused squarely on them—a phenomenon known as the **imaginary audience** (Elkind, 1981; R. M. Ryan & Kuczowski, 1994; Somerville, 2013). Because they believe themselves to be the center of attention, young teenagers (especially girls) are often preoccupied with their physical appearance and can be quite self-critical. To some degree, this heightened concern about what other people might think of them appears to be linked to maturational changes in certain areas of the brain, including areas that underlie self-focused emotions such as shame and embarrassment (Somerville et al., 2013).

A second noteworthy phenomenon in early adolescence is emergence of the **personal fable**: Young teenagers often believe they are completely unlike anyone else (Elkind, 1981; Lapsley, 1993). For instance, they may think that no one else—and certainly not a parent and teacher—has ever experienced the intensity of emotions they feel about thwarted goals or unhappy love affairs. Furthermore, some have a sense of invulnerability and immortality, believing themselves immune to the normal dangers of life. Thus they may take foolish risks, such as experimenting with drugs and alcohol, having unprotected sexual intercourse, and driving at high speeds (DeRidder, 1993; Dodge et al., 2009; Galván, 2012; Nell, 2002). It’s important to note, however, that adolescents are apt to take risks even when they *don’t* believe themselves to be invulnerable, for reasons you can discover in the Applying Brain Research feature “Understanding and Addressing Adolescent Risk Taking.”

**Late adolescence** The majority of older adolescents recover sufficiently from the double whammy of puberty and a changing school social environment to enjoy positive self-concepts and overall mental health (Harter, 1999; S. I. Powers, Hauser, & Kilner, 1989). The imaginary audience and personal fable phenomena slowly decline, although remnants remain throughout the high school years.

Older teenagers increasingly reflect on their own characteristics and abilities and begin to struggle with seeming inconsistencies in their self-perceptions, as one ninth grader explained:

I really don’t understand how I can switch so fast from being cheerful with my friends, then coming home and feeling anxious, and then getting frustrated and sarcastic with my parents. Which one is the *real* me? (Harter, 1999, p. 67)

Eventually, perhaps around 11th grade, most students integrate their various self-perceptions into a complex, multifaceted sense of self that reconciles apparent contradictions—for instance, recognizing that their inconsistent behaviors on different occasions mean that they’re “flexible” (Harter, 1999).

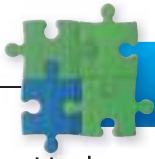
As older adolescents pull the numerous parts of themselves together, many of them begin to form a general sense of **identity**: a self-constructed definition of who they are, what things they find important, and what goals they want to accomplish in life. In their ongoing search for a long-term identity, adolescents may initially take on temporary identities, aligning themselves with a particular peer group, insisting on a certain mode of dress, or continually changing self-descriptions and photos on Facebook, Instagram, and other social media (Alemán & Vartman, 2009; Greenhow, Robelia, & Hughes, 2009; Seaton, Scottham, & Sellers, 2006). Adolescents may also have somewhat different identities in different contexts, depending on the traditional roles they have played in each context (Eccles, 2009; Greeno, 2006; Vadeboncoeur, Velloso, & Goessling, 2011). For example, a student might be a “loser” at school but a “star” in an out-of-school activity or a “leader” in a neighborhood gang.

Erik Erikson proposed that most people achieve an overall sense of identity by the end of adolescence (see Figure 3.1). In contrast, many contemporary developmental theorists believe that identity formation continues to be a work-in-progress well into adulthood, especially as people move into new and different life circumstances (Bandura, 2008; Sinai, Kaplan, & Flum, 2012; Vadeboncoeur et al., 2011). Marcia (1980, 1991) has described four distinct patterns of behavior that may characterize the status of a young person’s search for identity:



**MyEdLab**  
**Video Example 3.2.**

Especially in the teenage years, an obsession with physical appearance can sometimes lead to eating disorders, as 16-year-old Josh explains.



## Applying Brain Research

### Understanding and Addressing Adolescent Risk Taking

The human brain continues to mature in important ways throughout adolescence and early adulthood. With puberty come significant changes in brain regions that play a role in pleasure seeking, potentially heightening the desire for enjoyable activities and immediate rewards. Only later, perhaps in the late teens or early 20s, do regions of the prefrontal cortex that support rational decision making and self-restraint fully mature (V. F. Reyna, Chapman, Dougherty, & Confrey, 2012; Somerville, Jones, & Casey, 2010; Steinberg, 2009). Furthermore, young people show significant individual differences in brain activity levels in these important regions—differences that are correlated with their predisposition to seek out exciting but potentially dangerous activities, on the one hand, or to be cautious and prudent, on the other (Gianotti et al., 2009; Hollenstein & Loughheed, 2013; Joseph, Liu, Jiang, Lynam, & Kelly, 2009).

For such reasons, many adolescents have trouble planning ahead and controlling their impulses (Spear, 2007; Steinberg, Cauffman, Woolard, Graham, & Banich, 2009). In addition, they tend to make choices based on emotions (“This will be fun”) rather than on logic (“There’s a high probability of a bad outcome”) (Casey & Caudle, 2013; Luna, Paulsen, Padmanabhan, & Geier, 2013; V. F. Reyna et al., 2012). Thus, adolescent risk taking is most common in social contexts, where having fun is typically a high priority and it’s easy to get swept away by what peers are doing or suggesting.

With such research findings in mind, we offer two recommendations.

- **Channel adolescents’ risk-taking tendencies into safe activities.** Many adolescents enjoy trying things that are new, different, and perhaps a bit risky; such activities are reasonable if appropriate safeguards are in place. Team sports provide one outlet for both risk taking and social camaraderie. Preplanned, organized activities during traditionally high-risk periods are also beneficial; for example, many high schools offer all-night after-prom parties to keep students sober and safe when they might otherwise be drinking and driving.
- **Provide avenues through which students can safely and productively gain status with their peers.** Sometimes adolescents engage in risky behaviors—such as drinking, drug use, and sexual intercourse—in an attempt to project an adultlike image, to be “cool” and “with it” (J. P. Allen & Antonishak, 2008; Blanton & Burkley, 2008; Crosnoe, 2011). There are much healthier ways to show one’s coolness and withitness, some of which we can support at school. Gaining competence and prominence in rock music, student government, and community service are just a few of the many possibilities.

- *Identity diffusion.* The individual has made no commitment to a particular career path or ideological belief system. Some haphazard experimentation with particular roles or beliefs may have taken place, but the individual hasn’t yet embarked on a serious exploration of issues related to self-definition.
- *Foreclosure.* The individual has made a firm commitment to an occupation, a particular set of beliefs, or both. The choices have been based largely on what others (especially parents) have prescribed, without an earnest exploration of other possibilities.
- *Moratorium.* The individual has no strong commitment to a particular career or set of beliefs but is actively exploring and considering a variety of professions and ideologies. In essence, the individual is undergoing an identity crisis.
- *Identity achievement.* After going through a period of moratorium, the individual has emerged with a clear choice of occupation, a commitment to particular political or religious beliefs, or both.

For most young people, the ideal situation seems to be to proceed through a period of moratorium and exploration—a period that may continue well into adulthood—and to eventually settle on a clear identity that can flexibly evolve as life circumstances change (A. Kaplan & Flum, 2012; Luyckx et al., 2008; Sinai et al., 2012).

Table 3.1 presents developmental changes in children’s and adolescents’ sense of self and offers suggestions for how, as teachers, we can enhance their self-perceptions at different grade levels.

## DIVERSITY IN SENSE OF SELF

As you undoubtedly know from your own experiences, students differ considerably in their self-esteem and overall sense of self. Sometimes such differences are indirectly the result of biology. For instance, students who are physically attractive tend to have more positive self-concepts than students with less appealing physical features (Harter, Whitesell, & Junkin, 1998). And on average, students with cognitive, social, or physical disabilities have lower self-esteem than their classmates (T. Bryan, 1991; Marsh & Craven, 1997; Martinez & Huberty, 2010).

## DEVELOPMENTAL TRENDS

TABLE 3.1 • Sense of Self at Different Grade Levels

GRADE LEVEL	AGE-TYPICAL CHARACTERISTICS	EXAMPLE	SUGGESTED STRATEGIES
 <b>K-2</b>	<ul style="list-style-type: none"> <li>• Self-descriptions largely limited to concrete, easily observable characteristics</li> <li>• Some tendency to overestimate abilities and chances of future success, especially in domains in which one has little or no prior experience</li> </ul>	<p>When 6-year-old Jeff is asked to describe himself, he says, “I like animals. I like making things. I do good in school. I’m happy. Blue eyes, yellow hair, light skin.” He mentions nothing about his shyness, sense of humor, and ability to work and play independently—characteristics that would require considerable self-reflection and abstract thought to identify.</p>	<ul style="list-style-type: none"> <li>■ Encourage students to stretch their abilities by tackling the challenging tasks they think they can accomplish.</li> <li>■ Provide sufficient scaffolding to make success possible in various domains.</li> <li>■ Praise students for the things they do well; be specific about the behaviors you’re praising.</li> </ul>
 <b>3-5</b>	<ul style="list-style-type: none"> <li>• Increasing awareness of and differentiation among particular strengths and weaknesses</li> <li>• Association of such emotions as pride and shame with various self-perceptions</li> </ul>	<p>When Kellen begins fifth grade at his neighborhood middle school, his classwork rapidly deteriorates, despite individualized instruction in reading and spelling. At home one day, his mother finds him curled in a ball under his desk, crying and saying, “I can’t do this anymore!” Alarmed, Mom takes him to a series of specialists, who diagnose severe dyslexia. Kellen’s parents eventually find a school that provides considerable structure and scaffolding for students with learning disabilities. There Kellen shows dramatic improvement in virtually every area of the curriculum, and his self-esteem skyrockets.</p>	<ul style="list-style-type: none"> <li>■ Focus students’ attention on their improvement over time.</li> <li>■ Encourage pride in individual and group achievements, but be aware that students from some ethnic groups may prefer that recognition be given only for group achievements.</li> <li>■ Provide opportunities for students to look at one another’s work only when everyone has something to be proud of.</li> </ul>
 <b>6-8</b>	<ul style="list-style-type: none"> <li>• Increasingly abstract self-conceptions</li> <li>• For many, a decline in self-esteem after the transition to middle or junior high school (especially for girls)</li> <li>• Heightened concern about others’ perceptions and judgments of oneself (imaginary audience)</li> <li>• Excessive belief in one’s own uniqueness, sometimes accompanied by risk taking and a sense of invulnerability to normal dangers (personal fable)</li> </ul>	<p>Meghan describes a recent event in her eighth-grade algebra class: “I had to cough but I knew if I did everyone would stare at me and think I was stupid, hacking away. So I held my breath until I turned red and tears ran down my face and finally I coughed anyway and everyone <i>really</i> noticed then. It was horrible.”</p>	<ul style="list-style-type: none"> <li>■ After students make the transition to middle school or junior high, be especially supportive and optimistic about their abilities and potential for success.</li> <li>■ Minimize opportunities for students to compare their own performance unfavorably with that of others.</li> <li>■ Be patient when students show exceptional self-consciousness; give them strategies for presenting themselves well to others.</li> </ul>
 <b>9-12</b>	<ul style="list-style-type: none"> <li>• Search for the “real me” and an adult identity; experimentation with a variety of possible identities</li> <li>• Increasing integration of diverse self-perceptions into an overall, multifaceted sense of self</li> <li>• Gradual increase in self-esteem</li> <li>• Continuing risk-taking behavior (especially for boys)</li> </ul>	<p>Sixteen-year-old Kayla often revises her profile on Facebook—for instance, modifying the “Details About You” section—and regularly changes the photo that appears at the top of her profile. Sometimes she displays a happy Kayla, at other times a more sullen one; an early photo shows her in her basketball uniform, but a later one shows her in a skimpy party dress.</p>	<ul style="list-style-type: none"> <li>■ Give students opportunities to examine and try out a variety of adultlike roles.</li> <li>■ Encourage students to explore and take pride in their cultural and ethnic heritages.</li> <li>■ When discussing the potential consequences of risky behaviors, present the facts but don’t make students so anxious or upset that they can’t effectively learn and remember the information (e.g., avoid scare tactics).</li> </ul>

Sources: Bracken, 2009; R. Butler, 2008; Davis-Kean et al., 2008; Dweck, 2000; Elkind, 1981; Figner & Weber, 2011; Greenhow, Robelia, & Hughes, 2009; Harter, 1999; Liem, Marsh, Martin, McInerney, & Yeung, 2013; Lockhart et al., 2002; Marcia, 1980, 1991; T. M. McDevitt & Ormrod, 2007 (Kellen example); Nell, 2002; Nuemi, 2008; O’Mara et al., 2006; Orenstein, 1994, p. 47 (Meghan example); Pajares, 2009; Robins & Trzesniewski, 2005; Seaton et al., 2006; Sinai, Kaplan, & Flum, 2012; Somerville et al., 2013; Spear, 2007; Tatum, 1997; Whitesell et al., 2006.



**Gender differences.** For most young people, their gender is a core ingredient in their sense of self and can become increasingly prominent during puberty. Thus, many children and adolescents prefer to engage in behaviors and activities that are stereotypically “appropriate” for their gender. For example, to the extent that boys believe that getting good grades at school is something that “girls do,” they may have little interest in classroom activities and assignments (Elmore & Oyserman, 2012).

Some researchers have found gender differences in overall self-esteem, with boys rating themselves more highly than girls, especially in adolescence. Many students’ self-perceptions tend to be consistent with stereotypes about what males and females are supposedly “good at.” For instance, even when actual ability levels are the same, boys tend to rate themselves more highly in math and sports, and girls tend to rate themselves more highly in language and literacy (Bracken, 2009; D. A. Cole et al., 2001; Herbert & Stipek, 2005; Joët, Usher, & Bressoux, 2011).

**Cultural and ethnic differences.** In many Native American communities and many Middle Eastern and Far Eastern countries, children and adolescents see their group membership and connections with other individuals as central parts of who they are as human beings (Kağitçibaşı, 2007; M. Ross & Wang, 2010; Whitesell, Mitchell, Kaufman, Spicer, & the Voices of Indian Teens Project Team, 2006). In addition, many young people have a strong **ethnic identity**: They’re both aware and proud of their ethnic group and willingly adopt some of the group’s behaviors. Occasionally students’ ethnic identities can lead them to reject mainstream Western values. In some ethnic minority groups, peers may accuse high-achieving students of “acting White,” a label that essentially means “You’re not one of us” (Bergin & Cooks, 2008; Cross, Strauss, & Fhagen-Smith, 1999; Ogbu, 2008a). For the most part, however, students with a strong and positive ethnic identity do *well* in school both academically and socially (Altschul, Oyserman, & Bybee, 2006; Hamm, Hoffman, & Farmer, 2012; Smokowski, Buchanan, & Bacalleo, 2009). Furthermore, pride in one’s ethnic heritage and high academic achievement can serve as an emotional buffer against other people’s prejudicial insults and discrimination (L. Allen & Aber, 2006; P. J. Cook & Ludwig, 2008; DuBois, Burk-Braxton, Swenson, Tevendale, & Hardesty, 2002).

Not all students from minority groups affiliate strongly with their cultural and ethnic groups. Some students—especially those with multiple racial or cultural heritages—fluctuate in the strength of their ethnic identity depending on the context and situation (Hitlin, Brown, & Elder, 2006; Y.-Y. Hong, Wan, No, & Chiu, 2007; Yip & Fuligni, 2002). In addition, older adolescents may experiment with varying forms of an ethnic identity. Some teens, for instance, may initially adopt a fairly intense, inflexible, and perhaps hostile ethnic identity before eventually retreating to a more relaxed, open-minded, and productive one (Cross et al., 1999; Nasir, McLaughlin, & Jones, 2009; Seaton et al., 2006).



Encourage students to take pride in their cultural heritage.

#### MyEdLab Self-Check 3.2

**MyEdLab Application Exercise 3.2.** In this exercise, you can examine two student artifacts and form a few hypotheses about each student’s sense of self.

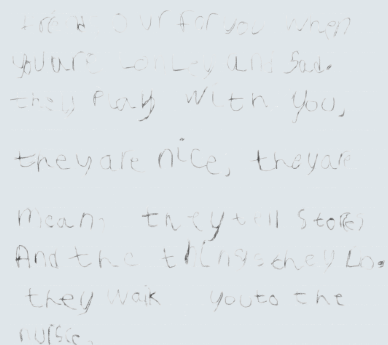
## Development of Peer Relationships and Interpersonal Understandings

For many students, interacting with and gaining the acceptance of peers—in some way *fitting in*—are more important than classroom learning and achievement (Crosnoe, 2011; Dowson & McInerney, 2001; LaFontana & Cillessen, 2010). Yet social success and academic success aren’t an either-or situation. In fact, students who enjoy good relationships with their peers at school are *more* likely to achieve at high levels (Gest, Domitrovich, & Welsh, 2005; Patrick, Anderman, & Ryan, 2002; Pellegrini & Bohn, 2005).

### ROLES OF PEERS IN CHILDREN’S DEVELOPMENT

Peer relationships, especially friendships, serve at least four functions in children’s and adolescents’ personal and social development. First, they provide an arena for learning and practicing a

**FIGURE 3.3** In this writing sample, 7-year-old Andrew describes the many benefits of having friends.



I like to go for you when  
 you're lonely and you  
 stay with you,  
 they are nice, they are  
 mean they will stop  
 and they will help you  
 they walk you to the  
 office.

variety of social skills, including cooperation, negotiation, emotional control, and conflict resolution (J. P. Allen & Antonishak, 2008; Granic, Lobel, & Engels, 2014; Larson & Brown, 2007). Second, young people can help one another with schoolwork and teach one another valued physical and cognitive skills—say, in skateboarding or computer programming—in which parents and other local adults have little or no expertise (Barron, 2006; Hickey, 2011; Ladd, Kochenderger-Ladd, Visconti, & Ettekal, 2012).

In addition, peers provide companionship, safety, and emotional support, as illustrated in Figure 3.3. They become a group with whom to eat lunch, a safe haven from playground bullies, and shoulders to cry on in times of trouble or confusion (Jordan, 2006; Laursen, Bukowski, Aunola, & Nurmi, 2007; Wentzel, 2009). Many adolescents (especially girls) reveal their innermost thoughts and feelings to their friends (Levitt, Guacci-Franco, & Levitt, 1993; Patrick et al., 2002; A. J. Rose et al., 2012). Friends often understand a teenager's perspectives—for instance, a preoccupation with physical appearance and concerns about the opposite sex—when others are seemingly clueless.

Peers play a fourth important role in personal and social development as well: They serve as socialization agents who both directly and indirectly encourage certain ways of behaving (M. H. Jones, Audley-Piotrowski, & Kiefer, 2012; A. M. Ryan, 2000; Wentzel & Watkins, 2011). Peers define options for leisure time, perhaps forming study groups, playing video games, or smoking cigarettes behind the school building. They serve as role models and provide standards for acceptable behavior, showing what's possible, what's admirable, what's cool. And they sanction one another for stepping beyond acceptable bounds, perhaps through ridicule, gossip, or ostracism. Traditionally such influences have been known as *peer pressure*, but many of them are better described as **peer contagion**, in which certain behaviors “spread” from one child or adolescent to another through a variety of means (B. B. Brown, Bakken, Ameringer, & Mahon, 2008; Sandstrom, 2011).

Much of the pressure to conform to other people's standards and expectations actually comes from within rather than from outside. In particular, most children and adolescents engage in **self-socialization**, putting pressure on *themselves* to adopt the behaviors they think others will find acceptable (B. B. Brown, 1990; Bukowski, Velasquez, & Brendgen, 2008; Crosnoe, 2011; Juvonen, 2006). Such self-pressure tends to be strongest in early adolescence; as an example, 12-year-old Mariel explains what happened when, in fifth grade, students from two different elementary schools transitioned to the same middle school:

When you get to middle school the other school comes in, you're like, “Oh no, what if they don't like me?” So you try to be cool and stuff. But you never seem to get there. They're always one step ahead of you.

A common misconception is that peer influences are invariably a bad thing, but in fact they're a mixed bag. Many peers encourage such desirable qualities as working hard in school, treating people kindly, and engaging in community service. Others, however, encourage cutting class, bullying certain students, consuming alcohol or drugs, or in other ways behaving in counterproductive ways (Altermatt, 2012; Mayeux, Houser, & Dyches, 2011; Prinstein & Dodge, 2008; Spinrad & Eisenberg, 2009; Wentzel & Watkins, 2011).

Although peers' behaviors and values certainly have an impact, their effects have probably been overrated. Most children and adolescents acquire a strong set of values and behavioral standards from their families, and they don't necessarily abandon these values and standards in the company of peers (B. B. Brown, 1990; W. A. Collins et al., 2000; Galambos, Barker, & Almeida, 2003). Furthermore, they tend to choose friends who are similar to themselves in academic achievement, leisure-time activities, and long-term goals (Kindermann, 2007; Prinstein & Dodge, 2008; A. M. Ryan, 2001). In some cases, they may lead “double lives” that enable them to attain academic success while maintaining peer acceptance (Grimes, 2002; Hemmings, 2004; Juvonen, 2006; Mac Iver, Reuman, & Main, 1995). For example, although they attend class and faithfully do homework, they may feign disinterest in scholarly activities, disrupt class with jokes or goofy behaviors, and express surprise at receiving high grades. In addition, they may act tough when they're in public, saving their softer sides for more private circumstances, as one sixth grader's reflection reveals:

You'd still have to have your bad attitude. You have to act—it's just like a movie. You have to act. And then at home you're a regular kind of guy, you don't act mean or nothing. But when you're around your friends you have to be sharp and stuff like that, like push everybody around. (Juvonen & Cadigan, 2002, p. 282)

It's important to keep in mind that self-socialization involves adopting behaviors that a child or adolescent *believes* to be critical for gaining favor with important peers. For example, many students think that their peers will look down on them for working hard at school, achieving at high levels, and in other ways being “smart,” when in fact their peers may secretly admire such behaviors (Hamm et al., 2012). And in any case, as the brain continues to mature in late adolescence, especially in the relatively “rational” prefrontal cortex, the concern about pleasing peers seems to dissipate a bit (Albert, Chein, & Steinberg, 2013).

As teachers, we can help students maintain a good public image in a variety of ways. For instance, we can help them acquire skills for presenting themselves in a favorable light—perhaps by teaching public-speaking techniques, nurturing artistic talents, or tactfully suggesting personal hygiene strategies. We can assign small-group projects in which every student has a unique talent to contribute. And when valued classmates ridicule academic achievement, we can allow students to demonstrate their accomplishments privately (e.g., through written assignments or one-on-one conversations) instead of in front of classmates.



Young adolescents often work hard to look cool in the eyes of their peers, as this drawing by 11-year-old Marci illustrates.



Help students look good in the eyes of their peers.

## COMMON SOCIAL GROUPS IN CHILDHOOD AND ADOLESCENCE

Researchers have distinguished among a variety of social groups in young people's lives, including friendships, cliques, crowds, subcultures, gangs, and romantic relations.

### FRIENDSHIPS

Close friends find activities that are mutually meaningful and enjoyable, and over time they acquire a common set of experiences that enable them to share certain perspectives on life (Gottman, 1986; Suttles, 1970). Because friends typically have an emotional investment in their relationship, they work hard to look at situations from one another's point of view and to resolve disputes that threaten to separate them. As a result, they develop increased perspective-taking and conflict resolution skills. Close, supportive friendships also foster self-esteem and a general sense of well-being (Basinger, Gibbs, & Fuller, 1995; Berndt, 1992; Bukowski, Motzoi, & Meyer, 2009; Newcomb & Bagwell, 1995).

### CLIQUEs, CROWDS, AND SUBCULTURES

With age and experience, many students form larger social groups that frequently get together. In early adolescence, **cliques**—moderately stable friendship groups of perhaps 3 to 10 individuals—provide the setting for most voluntary social interactions. Clique boundaries tend to be fairly rigid and exclusive—some people are “in,” whereas others are “out”—and memberships in various cliques often affect students' social status (B. B. Brown, 2011; Crockett, Losoff, & Peterson, 1984; Goodwin, 2006; Kindermann, McCollam, & Gibson, 1996). Here is 14-year-old Courtney's description of an especially exclusive “popular” clique in her eighth-grade class:

There are table groups at lunch. My group gave them all names. The popular ones, we call them the Sardines. They are in their little box, they don't let anyone into their box, they're so close together. You'll never see one of them by themselves. Like one of them's a TV and the other ones are like little remotes following her.

**Crowds** are considerably larger than cliques and don't have the tight-knit cohesiveness and carefully drawn boundaries of cliques. Their members tend to share certain characteristics and



MyEdLab

#### Video Example 3.3.

Good friendships can offer many benefits. What benefits does 13-year-old Ryan describe?

behaviors (e.g., “brains” study a lot, “jocks” are active in sports), attitudes about academic achievement, and (occasionally) ethnic background (B. B. Brown, 2011; Steinberg, 1996). Crowd membership may or may not be a voluntary thing; for instance, membership in a so-called “popular” crowd is apt to be based as much on a student’s reputation as on his or her actual efforts to affiliate with certain peers (B. B. Brown et al., 2008; Juvonen & Galván, 2008).

Occasionally a crowd takes the form of a **subculture**—a group that resists a powerful dominant culture by adopting a significantly different lifestyle (J. S. Epstein, 1998). Some subcultures are relatively benign; for example, as one of us authors knows well, some young teens may consistently wear baggy pants, address peers as “dude,” and spend a good deal of their time mastering new tricks on their skateboards. Other subcultures are worrisome, such as those that endorse racist and anti-Semitic behaviors (e.g., skinheads) and those that practice Satanic worship and rituals. Adolescents are more likely to affiliate with troublesome subcultures when they feel alienated from the dominant culture—perhaps that of their school or that of society more generally—and want to distinguish themselves from it in some way (Crosnoe, 2011; J. R. Harris, 1998).

In the upper high school grades, a greater capacity for abstract thought allows many adolescents to think of other people more as unique individuals and less as members of stereotypical categories. They may also discover characteristics they have in common with peers from diverse backgrounds. Perhaps as a result of such changes, ties to specific social groups tend to dissipate, hostilities between groups soften, and students become more open-minded in their friendship choices (B. B. Brown, Eicher, & Petrie, 1986; Gavin & Fuhrman, 1989; Shrum & Cheek, 1987).

### GANGS


A **gang** is a cohesive social group characterized by initiation rites, distinctive colors and symbols, “ownership” of a specific territory, and feuds with one or more rival groups. Typically, gangs are governed by strict rules for behavior and stiff penalties for violations. Young people affiliate with gangs for a variety of reasons. Some do so as a way of demonstrating loyalty to their family, friends, or neighborhood. Some seek the status and prestige that gang membership brings. Some have poor academic records and perceive gang activity as an alternative means of gaining recognition for accomplishments. Many members of gangs have troubled relationships with their families or have been consistently rejected by peers, and so they turn to gangs to get the emotional support they can find nowhere else (Dishion, Piehler, & Myers, 2008; Kodluboy, 2004; Petersen, 2004; Simons, Whitbeck, Conger, & Conger, 1991).

As teachers, we can definitely make a difference in the lives of any gang members in our classes (S. G. Freedman, 1990; Parks, 1995). We must, first and foremost, show these students that we truly care about them and their well-being. For instance, we can be willing listeners in times of trouble and can provide the support that gang members need to achieve both academic and social success. We must also have some knowledge of students’ backgrounds—such as their family dynamics, economic circumstances, and cultural upbringings—so that we can better understand the issues with which they may be dealing. And we must certainly work cooperatively and proactively with our colleagues to minimize violent gang activity at school.

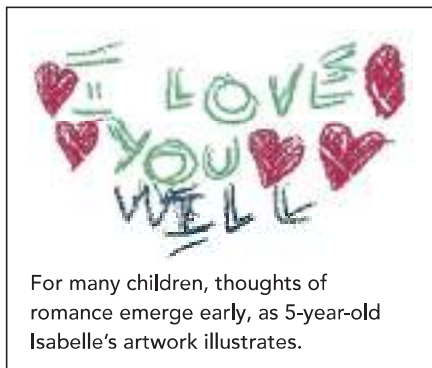
### ROMANTIC RELATIONSHIPS

As early as the primary grades, children talk of having boyfriends or girlfriends, and the opposite sex is a subject of interest throughout the elementary school years. With the onset of adolescence, the biological changes of puberty bring on new and sometimes unsettling feelings and sexual desires. Not surprisingly, then, romance is a frequent topic of conversation in the middle and high school grades. Middle school students’ romances tend to exist more in their minds than in reality; for example, two students might be identified as “going out” even if they never actually date. Young adolescents’ romantic thoughts may also involve crushes on people who are out of reach—perhaps favorite teachers or movie stars (B. B. Brown, 1999; Eckert, 1989; B. C. Miller & Benson, 1999).

Eventually many adolescents begin to date, especially if their friends are dating. Early choices in dating partners are often based on physical attractiveness or social status, and dates may involve only limited and superficial interaction (B. B. Brown, 2011; Furman, Brown, & Feiring, 1999; Pellegrini, 2002). As adolescents move into the high school grades, some form more intense, affectionate, and long-term relationships with

 Provide the academic, social, and emotional support that gang members need to be successful at school.

Chapter 13 offers specific strategies for minimizing—and ideally eliminating—gang-related aggression and violence at school.



For many children, thoughts of romance emerge early, as 5-year-old Isabelle’s artwork illustrates.

members of the opposite sex, and these relationships often (but by no means always) lead to sexual intimacy (J. Connolly & McIsaac, 2009; Furman & Collins, 2009).

From a developmental standpoint, romantic relationships have definite benefits: They can address young people's needs for companionship, affection, and security, and they provide an opportunity to experiment with new social skills and interpersonal behaviors (Davila, 2008; Furman & Simon, 2008; B. C. Miller & Benson, 1999). At the same time, romance can wreak havoc with adolescents' emotions. Adolescents have more extreme mood swings than younger children or adults, and for many this instability may be partly due to the excitement and frustration of being romantically involved or *not* involved (Davila, 2008; Furman & Collins, 2009; Larson, Clore, & Wood, 1999).

As students reach high school (occasionally earlier), a significant minority of them find themselves attracted to their own sex either instead of or in addition to the opposite sex. Adolescence can be a particularly confusing time for gay, lesbian, and bisexual individuals. Some struggle to make sense of their sexual orientation and may experience considerable depression. Yet many others enjoy good mental health, especially if their home and school environments communicate acceptance of diverse sexual orientations (Darwich, Hymel, & Waterhouse, 2012; Espelage, Aragon, Birkett, & Koenig, 2008; Savin-Williams, 2008).

The extent to which we, as teachers, talk about sexuality with our students must be dictated, in part, by school policies and the values of the community in which we work. At the same time, especially if we're teaching at the middle school or high school level, we must be aware that romantic and sexual relationships—whether real or imagined—are a considerable source of excitement, frustration, confusion, and distraction for students, and we must lend a sympathetic ear and an open mind to those students who seek our counsel and support.



Offer emotional support when valued romantic relationships fizzle or don't materialize.

## POPULARITY AND SOCIAL ISOLATION

When the daughter of one of us authors was in junior high school, she sometimes said, “No one likes the popular kids.” As self-contradictory as her remark might have been—and Mom always told her that it was—it's consistent with research findings. When students are asked to identify their most “popular” classmates, they identify peers who have dominant social status at school (perhaps those who belong to a prestigious social group) but in many cases are aggressive or stuck-up (Cillessen, Schwartz, & Mayeux, 2011; W. E. Ellis & Zarbatany, 2007; Hawley, 2014). For example, when 14-year-old Courtney was asked what the popular kids were like, she had this to say:

Nobody likes the popular kids. We all think they're bratty, they're mean. The only reason they're popular is because they'll make out with guys at the back of the bus. . . . They don't include anyone. They have their own parties that consist only of themselves. They can't branch out.

Yet contrary to Courtney's description, *truly* **popular students**—those whom many classmates select as people they'd like to do things with—may or may not hold high-status positions, but they're kind, trustworthy, and socially skillful, as Lupita is in the opening case study. They also tend to show genuine concern for others—for instance, by sharing, cooperating, and empathizing with peers (Asher & McDonald, 2009; Cillessen & van den Berg, 2012; Mayeux et al., 2011).

In contrast to popular students, **rejected students** are those whom classmates select as being the *least* preferred social companions. Students with few social skills—for example, those who are impulsive or aggressive—typically experience peer rejection (Asher & McDonald, 2009; Pedersen, Vitaro, Barker, & Borge, 2007; Rubin, Cheah, & Menzer, 2010). Students who are noticeably overweight and those who appear to be gay or lesbian are also frequent targets of ridicule, harassment, and rejection, as are some members of racial and ethnic minority groups (Graham & Hudley, 2005; Swearer, Espelage, Vaillancourt, & Hymel, 2010). Peer rejection over a lengthy period—psychologists call it *social marginalization*—can cause students considerable psychological distress and shame. To cope with such feelings and try to preserve a positive sense of self, these students may psychologically disengage from school life, jeopardizing their academic achievement as well as their social development and emotional well-being. Some of them begin to associate with other marginalized peers, who may or may not encourage attitudes and behaviors that will be productive over the long run (Bellmore, 2011; Ladd et al., 2012; Loose, Régner, Morin, & Dumas, 2012).



In this self-portrait, 10-year-old Sarah characterizes herself as a nerd (“neard”)—that is, as someone who isn't as “cool” as she might be within her peer group.

Members of a third group, **controversial students**, elicit diverse reactions, in that some peers really like them and others really *dislike* them. These students can, like some rejected students, be quite aggressive, but they also have good social skills that make them popular with at least some of their peers (Asher & McDonald, 2009; Cillessen & van den Berg, 2012; Mayeux et al., 2011). Many students whom classmates refer to as “popular” actually fall into this category.

Researchers have described a fourth category as well. **Neglected students** are those whom peers rarely choose as someone they would either most like or least like to do something with (Asher & Renshaw, 1981). Some of these seemingly overlooked students prefer to be alone, others are quite shy or don’t know how to go about initiating interaction, and still others are content with having only one or two close friends (Gazelle & Ladd, 2003; Guay, Boivin, & Hodges, 1999; McElhaney, Antonishak, & Allen, 2008). Occasionally “neglected” status is a temporary situation, but some students are friendless and socially marginalized for extended periods—such is often the case for recent immigrants and for students with disabilities—and these students are at higher-than-average risk for depression (Gazelle & Ladd, 2003; Igoa, 2007; Yaker, 1988).

Especially in the middle school and high school grades, most students are well aware of which peers do and don’t have high social status, and some of them do things that aren’t in their own or others’ best interests—for instance, engaging in substance abuse or casual sexual intimacy—in an effort to gain or maintain membership in an allegedly “popular” group (Cillessen et al., 2011; Crosnoe, 2011). For example, they may ridicule and bully peers whom they perceive to be odd or nerdy. And they may abruptly abandon friendships that could undermine their image of “coolness,” as 14-year-old Courtney revealed when describing something that happened in a close-knit group of five girls:

The five of us would hang out, sit at the same lunch table. Then Jamie became good friends with another group. They had parties, became the popular group, so Jamie left us. She had been Maggie’s best friend, so Maggie was devastated. Jamie wouldn’t talk to us, wouldn’t even wave at us in the hallway.

Not all status-seeking students successfully climb to the top of the social hierarchy, of course, and their failure to do so can leave them feeling isolated, depressed, and uninterested in school achievement (Cillessen et al., 2011; Crosnoe, 2011; Somerville, 2013).

One way that, as teachers, we might discourage counterproductive status-seeking behaviors is to act as *myth busters*, explicitly opening up conversations about what true popularity involves. For example, we might begin by having students think of a few peers they genuinely like and then of a few peers they really *don’t* like. These mental lists must remain only in students’ own heads—*no names should be mentioned*—but by asking students to reflect on such questions as “What characteristics do people on your first list have in common?” and “Why don’t you like the people on your second list?,” qualities such as “kind” and “trustworthy” (for the first list) and “stuck-up” and “mean” (for the second list) might come to light.

We can also help offset the hard feelings that peer rejection or neglect may engender by being especially warm and attentive with socially isolated students (Crosnoe, 2011; Wentzel, 1999). In fact, when *we* show that we like particular students, their classmates are more likely to accept and act positively toward them as well (L. Chang, 2003; L. Chang et al., 2004). We can also assist with interpersonal skills. Because of their social isolation, rejected and neglected students have fewer opportunities to develop the social skills that many of them desperately need (Coie & Cillessen, 1993; McElhaney et al., 2008; Vitaro, Boivin, Brendgen, Girard, & Dionne, 2012).

## SOCIAL COGNITION

To be effective in interpersonal relationships, students must engage in **social cognition**: They must consider how people around them are likely to think about, behave in, and react to various situations. Those who think regularly about other people’s thoughts and feelings tend to be socially skillful and make friends easily (Bosacki, 2000; P. L. Harris, 2006; Izard et al., 2001). Some psychologists propose that social cognition is a distinct human ability—which they call *emotional intelligence*—whereas others believe that it’s simply an integral part of people’s general intellectual and social functioning (J. D. Mayer, Salovey, & Caruso, 2008; Waterhouse, 2006; Zeidner,



Talk with students about what it *really* means to be popular.



Model positive feelings and behaviors toward rejected and neglected students, and help these students acquire good social skills.

Roberts, & Matthews, 2002). In any case, certain structures in the brain do seem to be dedicated to it (Spunt & Lieberman, 2013).

## PERSPECTIVE TAKING

One important element of social cognition is **perspective taking**, looking at the world from other people's viewpoints. The following situation provides an example.

### EXPERIENCING FIRSTHAND

#### LAST PICKED

Consider this scenario:

Kenny and Mark are co-captains of the soccer team. They have one person left to choose for the team. Without saying anything, Mark winks at Kenny and looks at Tom, who is one of the remaining children left to be chosen for the team. Mark looks back at Kenny and smiles. Kenny nods and chooses Tom to be on their team. Tom sees Mark and Kenny winking and smiling at each other. Tom, who is usually one of the last to be picked for team sports, wonders why Kenny wants him to be on his team. . . .

- Why did Mark smile at Kenny?
- Why did Kenny nod?
- Why did Kenny choose Tom to be on the team? How do you know this?
- Do you think that Tom has any idea of why Kenny chose him to be on the team? How do you know this? . . .
- How do you think Tom feels? (Bosacki, 2000, p. 711)

To answer these questions, you must look at the situation from the perspectives of the three boys involved. For instance, if you put yourself in Tom's shoes, you might suspect that he has mixed feelings. If he enjoys soccer, he may be happy to have a chance to play, but he may also be wondering whether the other boys' nonverbal signals indicate a malicious intention to make him look foolish on the soccer field. And, of course, Tom may feel embarrassed or demoralized at consistently being one of the last children picked for a team. (Accordingly, asking some students to select classmates for team games is generally *not* recommended.)

Recent brain research indicates that, to some degree, human beings may be “prewired” to look at situations from other people's perspectives as well as their own. In particular, certain neurons in the brain, known as **mirror neurons**, fire either when a person is performing a particular behavior *or* when the person watches *someone else* perform that behavior. Some of these mirror neurons are involved both in feeling certain emotions—perhaps disgust or anguish—and in observing such emotions in others' facial expressions (Gallese, Gernsbacher, Heyes, Hickok, & Iacoboni, 2011; Rizzolatti & Sinigaglia, 2008).

Yet truly effective perspective taking also involves active, conscious thinking and learning about human beings' general mental and psychological states. As children grow older, most develop and increasingly refine a **theory of mind**—a self-constructed understanding of their own and others' thoughts, beliefs, feelings, and motives. The development of a theory of mind appears to involve the prefrontal cortex of the brain—a part of the brain that continues to mature over the course of childhood and adolescence (Liu, Sabbagh, Gehring, & Wellman, 2009; Steinberg, 2009).

Probably as a result of both experience and brain maturation, children gain an increasingly complex understanding of human thought processes and feelings as they grow older, enabling them to become increasingly effective in interacting with others.

**Childhood.** Consistent with what we know about cognitive development, young children tend to focus on other people's concrete, observable characteristics and behaviors (e.g., look once again at Andrew's essay in Figure 3.3). However, they do have some awareness of other people's inner worlds. As early as age 4 or 5, they realize that what *they* know may be different from what *other people* know (Wellman, Cross, & Watson, 2001; Wimmer & Perner, 1983). They also have some ability to make inferences about other people's mental and emotional states—for instance, to deduce that people who behave in certain ways have certain intentions or feelings (P. L. Harris,




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#### Video Example 3.4.

What examples of perspective taking can you identify in this interview with 13-year-old Crystal?

2006; Schult, 2002; Wellman, Phillips, & Rodriguez, 2000). As children progress through the elementary grades, they also begin to understand that people's actions don't always reflect their thoughts and feelings—for instance, that someone who appears to be happy may actually feel sad (Flavell, Miller, & Miller, 2002; Gnepp, 1989; Selman, 1980).

**Early adolescence.** Most young adolescents realize that people can have mixed feelings about events and other individuals (Donaldson & Westerman, 1986; Flavell & Miller, 1998; Harter & Whitesell, 1989). And courtesy of their expanding cognitive abilities, memory capacity, and social awareness, young adolescents become capable of **recursive thinking** (Oppenheimer, 1986; Perner & Wimmer, 1985). That is, they can think about what other people might be thinking about them and eventually can reflect on other people's thoughts about them through multiple iterations (e.g., “You think that I think that you think . . .”). This isn't to say that adolescents (or adults, for that matter) always use this capacity, however. Consistent with our earlier discussion of the *imaginary audience*, focusing primarily about one's *own* perspective is a common phenomenon in the early adolescent years (Tsethlikai & Greenhoot, 2006; Tsethlikai, Guthrie-Fulbright, & Loera, 2007).

 When students seem focused only on their own points of view, encourage them to consider why others might reasonably think and behave as they do.

**Late adolescence.** In the high school years, teenagers can draw on a rich body of knowledge derived from numerous social experiences. Consequently, most of them become ever more skillful at drawing inferences about people's psychological characteristics, intentions, and needs (Eisenberg, Carlo, Murphy, & Van Court, 1995; Paget, Kritt, & Bergemann, 1984). In addition, they're more attuned to the complex dynamics that influence behavior—not only thoughts, feelings, and present circumstances but also past experiences (C. A. Flanagan & Tucker, 1999; Selman, 1980). What we see emerging in the high school years, then, are budding psychologists: individuals who can be quite astute in deciphering and explaining the motives and actions of others.


**Promoting perspective taking.** Virtually any classroom offers many opportunities for perspective taking. One strategy is to talk frequently about people's thoughts, feelings, and motives (Ruffman, Slade, & Crowe, 2002; Wittmer & Honig, 1994; Woolfe, Want, & Siegal, 2002). In the process, we must, of course, use age-appropriate language. With first graders we might use such words as *think*, *want*, and *sadness*. With fifth graders we might talk about *misunderstanding*, *frustration*, and *mixed feelings*. Most high school students have the cognitive and social reasoning capabilities to understand fairly abstract and complex psychological terms, such as *being passive-aggressive* and *having an inner moral compass*.

Another important strategy is to take advantage of situations in which people have diverse perspectives and beliefs about a situation. For example, in times of disagreement or conflict, students and teachers alike benefit from putting themselves in the other party's shoes (Adalbjarnardottir & Selman, 1997; Gehlbach, Brinkworth, & Harris, 2012). And when two or more students clash in the classroom or elsewhere on school grounds, an effective approach is *peer mediation*, in which specially trained peers elicit their differing points of view and help them reach an equitable solution (Deutsch, 1993; D. W. Johnson & Johnson, 1996, 2006).

Opportunities for perspective taking also arise in lessons about academic subject matter. For example, in discussions of current events, teachers might have different students—or, using the Internet, same-age classes at different schools—take various countries' perspectives as they explore significant world problems, such as climate change or arms control (Gehlbach et al., 2008).

## SOCIAL INFORMATION PROCESSING

Children and adolescents have a lot to think about when they consider what other people are thinking, feeling, and doing. The mental processes involved in understanding and responding to social events are collectively known as **social information processing** (e.g., Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006; Fontaine, Yang, Dodge, Bates, & Pettit, 2008; E. R. Smith & Semin, 2007). Among other things, social information processing involves paying *attention* to certain behaviors in a social situation and trying to *interpret* and make sense of those behaviors. For example, when students interact with classmates, they might focus on certain remarks, facial expressions, and body language and try to figure out what a classmate really means by, say, a thoughtless comment or sheepish grin. Students also consider one or more *goals* they hope to achieve during an interaction—perhaps preserving a friendship, on the one hand, or teaching

 Regularly ask students to reflect on other people's thoughts, feelings, and motives.

Chapter 10 describes peer mediation in more detail.

Chapter 6 discusses *information processing theory*, on which this concept of social information processing is based.



somebody a “lesson,” on the other. Then, taking into account both their interpretations and their goals, students draw on their previous knowledge and experiences to identify a number of possible responses and choose what is, in their eyes, a productive course of action. As you’ll see in the next section, an understanding of social information processing is especially helpful in explaining why some students are unusually aggressive toward their peers.

## AGGRESSION

**Aggression** is an action intentionally taken to hurt another person either physically or psychologically. The word typically brings to mind some form of **physical aggression** (e.g., hitting, shoving), which can potentially cause bodily injury. But it may instead involve **psychological aggression**—an action intended to cause mental anguish or reduce self-esteem. In some cases, psychological aggression is specifically aimed at undermining friendships and other interpersonal relationships—perhaps by spreading unkind rumors or ostracizing someone from a valued social group—in which case it’s also called **relational aggression**. As a general rule, aggression declines over the course of childhood and adolescence, but it increases for a short time after students make the transition from elementary school to middle school or junior high (Bradshaw, Waasdorp, & O’Brennan, 2013; Pellegrini, 2002).

Researchers have identified two distinct groups of aggressive students (Crick & Dodge, 1996; Poulin & Boivin, 1999; Vitaro, Gendreau, Tremblay, & Oligny, 1998). Those who engage in **proactive aggression** deliberately initiate aggressive behaviors as a means of obtaining desired goals. Those who engage in **reactive aggression** act aggressively primarily in response to frustration or provocation. Of the two groups, students who exhibit proactive aggression are more likely to have trouble maintaining productive friendships (Hanish, Kochenderfer-Ladd, Fabes, Martin, & Denning, 2004; Poulin & Boivin, 1999). Those who direct considerable aggression toward particular peers—whether it be physical or psychological aggression—are known as **bullies**. Students who are immature, anxious, and socially isolated are frequent victims of bullies, as are students with nontraditional sexual orientations and students with disabilities (Hamovitch, 2007; J. P. Robinson & Espelage, 2012; M. W. Watson, Andreas, Fischer, & Smith, 2005).

Some children and adolescents are genetically more predisposed to aggression than their peers, and others may exhibit heightened aggression as a result of neurological abnormalities (Brendgen et al., 2008; Raine, 2008; van Goozen, Fairchild, & Harold, 2008). But environmental factors can foster aggressive behavior as well. Many aggressive students live in dysfunctional conditions at home, perhaps including frequent conflicts and displays of anger, harsh punishment or child maltreatment, and a general lack of affection and appropriate social behavior (Christenson, 2004; Maikovich, Jaffee, Odgers, & Gallop, 2008; Pettit, 2004). In addition, regular exposure to violence in the community or through various media (e.g., television, music, video games) seems to increase aggressive behavior in young people (C. A. Anderson et al., 2003; Guerra, Huesmann, & Spindler, 2003; Huesmann, Moise-Titus, Podolski, & Eron, 2003; Prot et al., 2014).

It’s important to note here that many children and adolescents who are routinely exposed to violence at home or elsewhere are *not* especially aggressive (Margolin & Gordis, 2004; M. J. Pearce, Jones, Schwab-Stone, & Ruchkin, 2003). Certain cognitive and motivational factors seem to underlie aggressive behavior, including the following:

- *Poor perspective-taking ability.* Students who are highly aggressive tend to have limited ability to look at situations from other people’s perspectives or to empathize with their victims (Coie & Dodge, 1998; Damon & Hart, 1988; Marcus, 1980).
- *Misinterpretation of social cues.* Students who are aggressive toward peers tend to interpret others’ behaviors as reflecting hostile intentions, especially when those behaviors have ambiguous meanings. This **hostile attributional bias** is especially prevalent in children who are prone to *reactive aggression* (Bukowski, Brendgen, & Vitaro, 2007; Crick, Grotpeter, & Bigbee, 2002; Dodge et al., 2003).
- *Prevalence of self-serving goals.* For most students, establishing and maintaining interpersonal relationships is a high priority. For aggressive students, however, achieving more self-serving goals—perhaps maintaining an inflated self-image, seeking revenge, or gaining power and dominance—often takes precedence (Baumeister et al., 1996; Cillessen & Rose, 2005; Menon et al., 2007; Pellegrini, Roseth, Van Ryzin, & Solberg, 2011).


- *Ineffective social problem-solving strategies.* Aggressive students often have little knowledge of how to persuade, negotiate, or compromise. Instead, they're apt to resort to hitting, shoving, barging into play activities, and other ineffective strategies (Neel, Jenkins, & Meadows, 1990; D. Schwartz et al., 1998; Troop-Gordon & Asher, 2005).
- *Belief in the appropriateness and effectiveness of aggression.* Many aggressive students believe that violence and other forms of aggression are acceptable ways of resolving conflicts and retaliating against others' misdeeds (Paciello, Fida, Tramontano, Lupinetti, & Caprara, 2008; M. W. Watson et al., 2005; Zelli, Dodge, Lochman, & Laird, 1999). Those who display high rates of *proactive* aggression are also apt to believe that aggressive action will yield positive results—for instance, that it will enhance social status at school or restore “honor” to one's family or social group (R. P. Brown, Osterman, & Barnes, 2009; Mayeux et al., 2011; Pellegrini & Bartini, 2000). Not surprisingly, aggressive children tend to associate with one another, thereby confirming one another's beliefs that aggression is appropriate (Crick, Murray-Close, Marks, & Mohajeri-Nelson, 2009; Espelage & Swearer, 2004).

Both initiators and recipients of aggression often have problems later on. Unless adults actively intervene, many aggressive students (especially those who exhibit proactive aggression) show a continuing pattern of aggression and violence as they grow older, and such a pattern almost guarantees long-term maladjustment and difficulties with peers (Dodge et al., 2003; Ladd & Troop-Gordon, 2003; Swearer et al., 2010). Meanwhile, children who are frequent targets of bullying can become anxious and depressed—sometimes suicidal—and may frequently skip school or even drop out altogether (Cornell, Gregory, Huang, & Fan, 2013; Hoggund, 2007; Ladd et al., 2012). Often the psychological aggression involved in bullying—taunts, name-calling, blatant exclusion from social activities, and the like—causes more long-term harm than any physical aggression that accompanies it (Bradshaw et al., 2013; Doll, Song, & Siemers, 2004; Goodwin, 2006).

Even innocent bystanders tend to suffer from the aggression they witness at school. For example, when they observe one classmate bullying another, their own sense of safety at school diminishes (M. J. Mayer & Furlong, 2010; Rivers, Poteat, Noret, & Ashurst, 2009). Furthermore, if they see bullying and other aggressive behaviors going unpunished, they may come to believe that such actions are perfectly acceptable (E. J. Meyer, 2009; D. T. Miller & Prentice, 1994).

As teachers, we *must* intervene when some students victimize others, and we must keep a watchful eye for additional incidents of physical or psychological aggression down the road. Regular victims of aggression need social and emotional support from us and from their classmates. Some may also need one or more sessions with a school counselor, perhaps to address feelings of vulnerability and depression or perhaps to learn skills that will minimize future victimization incidents (Espelage & Swearer, 2004; R. S. Newman, 2008; Yeung & Leadbeater, 2007).

The perpetrators of aggression require intervention as well. They must be given appropriate consequences for their actions, of course, but they should also be helped to behave more appropriately. Specific strategies should be tailored to the thoughts and motives that underlie their aggression. Such strategies as encouraging perspective taking, helping students interpret social situations more accurately, and teaching effective social problem-solving skills are potentially useful in reducing aggression and other disruptive behaviors (Cunningham & Cunningham, 2006; Frey, Hirschstein, Edstrom, & Snell, 2009; Guerra & Slaby, 1990; Horne, Orpinas, Newman-Carlson, & Bartolomucci, 2004; Hudley & Graham, 1993). Putting students in situations where they must explicitly *help*, rather than harm, others—for instance, asking them to tutor younger children—can also be beneficial (J. R. Sullivan & Conoley, 2004). Ultimately, interventions with aggressive students are most likely to be effective if schools communicate the importance of acting kindly and respectfully toward all members of the school community, teachers and students alike (Espelage & Swearer, 2004; E. J. Meyer, 2009; Parada, Craven, & Marsh, 2008; S. W. Ross & Horner, 2009).

 Be on the lookout for bullying and other forms of aggression, and take appropriate actions with both the victims and the perpetrators.



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**Interactive Case 3.1.**

Teachers must intervene whenever students are either the perpetrators or victims of aggression. In this activity, you can gain practice with potentially effective intervention strategies.

## TECHNOLOGY AND PEER RELATIONSHIPS

Thanks to wireless technologies (e.g., cell phones) and the Internet, many students now communicate quite frequently—daily, sometimes almost hourly—with some of their peers (Crosnoe, 2011; Greenhow et al., 2009; Valkenburg & Peter, 2009). For example, email and instant messaging (i.e., “texting”) allow quick and easy ways of asking classmates about homework assignments,

making plans for weekend social activities, and seeking friends' advice and emotional support. Social networking sites (e.g., Facebook, Instagram) provide means of sharing personal information and potentially finding like-minded age-mates. Internet chat rooms allow group discussions about virtually any topic. Judicious use of such mechanisms can enhance students' self-esteem, connectedness with peers, social problem solving, and general psychological well-being (Ellison, Steinfield, & Lampe, 2007; Greenhow et al., 2009; Gross, Juvonen, & Gable, 2002; Valkenburg & Peter, 2009).

Unfortunately, wireless technologies and the Internet also provide vehicles for **cyberbullying**—electronically transmitting hostile messages, broadcasting personally embarrassing information, or in other ways causing someone significant psychological distress. For example, a student might upload humiliating video footage on YouTube, post malicious (and possibly false) gossip on Facebook, or set up a website on which classmates can “vote” for their class’s “biggest loser” or “easiest slut” (Shariff, 2008; Valkenburg & Peter, 2009; Willard, 2007). Cyberbullying can be more harmful than face-to-face bullying, in part because the perpetrators often remain anonymous (and so can’t be confronted) and in part because highly defamatory material can spread like wildfire through a large peer group (Kowalski & Limber, 2007; Rivers, Chesney, & Coyne, 2011). Unfortunately, cyberbullying is one form of aggression that *doesn't* seem to decline over the course of adolescence (Bradshaw et al., 2013).

As teachers, we must join with other faculty members and school administrators to talk with students about wise and socially appropriate uses of modern technology, and we must explain in no uncertain terms that cyberbullying in any form—whether it involves taunts, threats, unkind rumors, or any other material that can cause psychological harm to others—is *totally unacceptable*. And, of course, we must monitor students' in-class use of the Internet.



Explain what cyberbullying is and why it is unacceptable.

## DIVERSITY IN PEER RELATIONSHIPS AND SOCIAL COGNITION

Some students with disabilities have delays in the development of social cognition and, as a result, often have trouble in interpersonal relationships. For example, students with significant delays in their overall cognitive development (i.e., children with intellectual disabilities) typically have limited understanding of appropriate behaviors in social situations (S. Greenspan & Granfield, 1992; Leffert, Siperstein, & Millikan, 2000). Also, some students with seemingly normal cognitive abilities have specific deficits in social cognition. In a mild form of autism known as *Asperger syndrome*, students may show average or above-average academic achievement but have great difficulty drawing accurate inferences from others' behaviors and body language, apparently as a result of a brain abnormality (G. Dawson & Bernier, 2007; Hobson, 2004; Tager-Flusberg, 2007). In addition, many students with chronic emotional and behavioral disabilities have poor perspective-taking and social problem-solving abilities and thus may have few, if any, friends (Espelage, Mebane, & Adams, 2004; Harter et al., 1998; Webber & Plotts, 2008).

**Gender differences.** Gender differences have been observed in interpersonal behaviors. Boys tend to hang out in large groups, whereas girls tend to favor smaller, more intimate gatherings with close friends (Maccoby, 2002). Also, girls seem to be more astute at reading other people's body language, and they work harder to maintain group harmony (Benenson et al., 2002; Bosacki, 2000; Rudolph et al., 2005). Furthermore, aggression tends to take different forms in boys (who are prone to physical aggression) and in girls (who are more apt to engage in relational aggression, such as disrupting friendships and tarnishing others' reputations) (Card, Stucky, Sawalani, & Little, 2008; Crick et al., 2002; Pellegrini, 2011; Pellegrini & Archer, 2005).

**Cultural and ethnic differences.** Interpersonal behaviors vary from culture to culture as well. For instance, some cultural groups (e.g., some groups in northern Canada and in the South Pacific) regularly use seemingly antisocial behaviors—especially teasing and ridicule—to teach children to remain calm and handle criticism (Rogoff, 2003). In contrast, many Native Americans, many people of Hispanic heritage, and certain African American communities place particular emphasis on interpersonal relationships and group harmony, and many Asian groups strongly discourage aggression. Children from these backgrounds may be especially adept at negotiation and peace making (Gardiner & Kosmitzki, 2008; P. Guthrie, 2001; Halgunseth et al., 2006; Leonard & Martin, 2013; Rubin et al., 2010; Witmer, 1996).

## PROMOTING HEALTHY PEER RELATIONSHIPS

As teachers, we're in an excellent position to assess how students think about and behave in social situations and to help them interact more effectively with others. Following are several strategies that research has shown to be effective.



Extracurricular activities can promote productive peer relationships and a general “team spirit.” They can also be a source of success for students who struggle with academic tasks. Here 7-year-old Danny, who has a learning disability, expresses his love of baseball.

- *Provide regular opportunities for social interaction and cooperation.* By their very nature, some instructional strategies require considerable student interaction. Assignments and activities that require students to work cooperatively to achieve a common goal can foster leadership skills and a willingness to both help and get help from peers (Certo, 2011; Ladd et al., 2014; Y. Li et al., 2007). And activities in which students communicate with one another online—for instance, by posting their ideas and questions about classroom topics on a class website—can be especially valuable for students who are shy or otherwise feel uncomfortable communicating with peers in a more public fashion (Hewitt & Scardamalia, 1998).

A typical school day also includes many occasions in which students can interact in less structured ways. For example, during recess, students' play activities—whether the fantasy play of preschoolers and kindergartners or the rule-based games of older children and adolescents—can promote cooperation, sharing, perspective taking, and conflict resolution skills (Coplan & Arbeau, 2009; Creasey, Jarvis, & Berk, 1998; Jarrett, 2002). And before and during class, students often talk and joke with peers who are seated nearby. Accordingly, we might frequently change assigned seating arrangements so that students can get to know certain classmates better and perhaps discover common interests or similar senses of humor (van den Berg, Seters, & Cillessen, 2012).

- *Help students interpret social situations accurately and productively.* When students consistently have trouble getting along with peers, explicit training in social cognition can make a difference. Effective interventions are likely to involve a series of training sessions—sometimes over a lengthy time period—in which, through role-playing and similar activities, students practice making inferences about other people's intentions and identifying appropriate courses of action. Students also learn strategies for reminding

themselves of how to behave in various situations—for example, “When I don't have the information to tell what he meant, I should act as if it were an accident” (Hudley & Graham, 1993, p. 128). Such interventions can significantly reduce the degree to which students perceive hostile intentions in others or endorse aggressive retaliation in response to peers' behaviors (Dodge, Godwin, & The Conduct Problems Prevention Research Group, 2013; Hudley & Graham, 1993).

- *Teach specific social skills, provide opportunities for students to practice them, and give feedback.* The vast majority of children and adolescents want to have positive interactions with their age-mates and, better still, make friends with peers who can offer regular companionship and support (Ladd et al., 2012; A. M. Ryan & Shim, 2008). Because we teachers spend so much time with growing children, we're in an excellent position to teach them important social skills that they haven't acquired on their own—for instance, how to cooperate with others, say “no” in tactful ways, and amicably resolve conflicts. We can teach students appropriate ways of interacting with others both through explicit verbal instructions and through modeling desired behaviors. Such instruction is especially effective when we also ask students to practice their newly learned social skills (perhaps through role-playing) and give them concrete feedback about how they're doing (Bierman & Powers, 2009; Leaf et al., 2012; S. Vaughn, 1991; Watkins & Wentzel, 2008).

- *Promote understanding, communication, and interaction among diverse groups.* Even when students have good social skills, many of them interact almost exclusively within small, close-knit groups, and a few others remain socially isolated. For example, students often divide themselves along ethnic lines when they eat lunch and interact in the school yard. In fact, ethnic segregation *increases* once students reach the middle school grades. As young adolescents




**MyEdLab**  
Video Example 3.5.

Some students need explicit instruction in social skills. What strategies does this special education teacher use to teach her students how to give compliments?

from ethnic minority groups begin to look closely and introspectively at issues of racism and ethnic identity, they often find it helpful to compare experiences and perspectives with other group members. Ethnic stereotypes and prejudices can also contribute to this self-imposed segregation (B. B. Brown et al., 2008; G. L. Cohen & Garcia, 2008; Ogbu, 2008b; Tatum, 1997).


Yet when students from diverse groups interact regularly—and especially when they come together as equals, work toward a common goal, and see themselves as members of the same team—they're more likely to accept and value one another's differences (Hodson, 2011; Oskamp, 2000; Pfeifer, Brown, & Juvonen, 2007). The Creating a Productive Classroom Environment box "Encouraging Positive Interactions Among Diverse Individuals and Groups" offers several strategies for expanding students' friendship networks.

 *Explain what bullying is and why it cannot be tolerated.* Students and teachers alike often have misconceptions about bullying. For instance, they may think it always involves physical aggression, even though psychological forms of aggression—such as name calling, sexual harassment, deliberate social exclusion, and defamatory Internet postings—constitute bullying as well. Another common misconception is that the victims of bullies somehow deserve what they get, perhaps because they display immature behaviors or need to "toughen up" and learn to defend themselves. Thus, many students condone bullying and act as a supportive audience for the perpetrators (Salmivalli & Peets, 2009; Swearer et al., 2010). And teachers who refuse to intervene when they see or hear about bullying and harassment indirectly communicate the message that such behaviors are acceptable



## Creating a Productive Classroom Environment


### Encouraging Positive Interactions Among Diverse Individuals and Groups

 **Set up situations in which students can form cross-group friendships.**


To help her students get to know a greater number of their peers, a junior high school science teacher gives them assigned seats in her classroom and changes the seating chart once a month. She also decides how students will be paired for weekly lab activities.

 **Minimize or eliminate barriers to social interaction.**

Students in a third-grade class learn basic words and phrases in American Sign Language so that they can work and play with a classmate who is deaf.


 **Encourage and facilitate participation in extracurricular activities, and take steps to ensure that no single group dominates in membership or leadership in any particular activity.**

When recruiting members for the scenery committee for the eighth grade's annual class play, the committee's teacher-adviser encourages both "popular" and "unpopular" students to participate. Later he divides the workload in such a way that students who don't know one another well must work closely and cooperatively.

 **As a class, discuss the undesirable consequences of intergroup hostilities.**

A high school English teacher in a low-income, inner-city school district uses a lesson on Shakespeare's *Romeo and Juliet* to initiate

a discussion about an ongoing conflict between two rival ethnic-group gangs in the community. "Don't you think this family feud is stupid?" she asks her students, referring to Shakespeare's play. When they agree, she continues, "The Capulets are like the Latino gang, and the Montagues are like the Asian gang. . . . Don't you think it's stupid that the Latino gang and the Asian gang are killing each other?" The students immediately protest, but when she presses them to justify their thinking, they gradually begin to acknowledge the pointlessness of a long-standing rivalry whose origins they can't even recall.

 **Develop nondisabled students' understanding of students with disabilities, provided that the students and their parents give permission to share what might otherwise be confidential information.**

In a widely publicized case, Ryan White, a boy who had contracted AIDS from a blood transfusion, met considerable resistance against his return to his neighborhood school because parents and students thought he might infect others. After Ryan's family moved to a different school district, school personnel actively educated the community about the fact that AIDS doesn't spread through casual day-to-day contact. Ryan's reception at his new school was overwhelmingly positive. Later Ryan described his first day at school: "When I walked into classrooms or the cafeteria, several kids called out at once, 'Hey, Ryan! Sit with me!'"

(Buston & Hart, 2001; Juvonen & Galván, 2008; Veenstra, Lindenberg, Huitsing, Sainio, & Salmivalli, 2014).

Earlier in the chapter we authors urged you to be on the lookout for incidents of bullying. This is easier said than done, because many incidents of bullying occur beyond the watchful eyes of school faculty members (K. Carter & Doyle, 2006; Swearer et al., 2010). It's important, then, that *students* learn about the many forms bullying can take and the truly harmful effects it can have on its victims. One simple strategy is to use the mnemonic *PIC* to describe what bullying involves:

- Purposeful behavior—"He meant to do it."
- Imbalanced—"That's not fair, he's bigger."
- Continual—"I'm afraid to enter the classroom because she's always picking on me." (Horne et al., 2004, pp. 298–299)



Teach students effective strategies for responding to bullies.

We can also teach students strategies to use when they're being bullied (e.g., they might walk away or respond with a humorous come-back) or when they observe others being victimized (e.g., they might say "Stop, you're being disrespectful" and escort the victim from the scene) (Juvonen & Galván, 2008; S. W. Ross & Horner, 2009). In general, through our school policies and day-to-day actions, all students must learn that bullying is *never acceptable* and that there will be serious consequences for engaging in or encouraging it (Ansary, Elias, Greene, & Green, 2015; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013).

- *Help change the reputations of formerly antisocial students.* Unfortunately, students' bad reputations often live on long after their behavior has changed for the better, and thus their classmates may continue to dislike and reject them (Bierman, Miller, & Stabb, 1987; Caprara, Dodge, Pastorelli, & Zelli, 2007; Juvonen & Weiner, 1993). So when we work to improve the behaviors of aggressive and other antisocial students, we must work to improve their reputations as well. For example, we might encourage their active involvement in extracurricular activities or place them in structured cooperative learning groups where they can use their newly developed social skills. We should also demonstrate through our words and actions that *we* like and appreciate them, as our attitudes are apt to be contagious (L. Chang, 2003; L. Chang et al., 2004).

Underlying our behaviors as teachers should be the message that *anyone can change for the better*. For instance, students can more easily forgive a former bully if they learn that the classmate's behaviors did *not* reflect innate nastiness or some other permanent personality flaw—that, instead, those behaviors were due to temporary factors that have now been resolved (Yeager & Dweck, 2012). In one way or another we must help students discover that previously antisocial classmates have changed and are worth getting to know better.

- *Create a general climate of respect for others.* Teachers who effectively cultivate productive student interactions and friendships also communicate a more general message: We must all have compassion for and respect one another as human beings. Fernando Arias, a high school vocational education teacher, once put it this way:

In our school, our philosophy is that we treat everybody the way we'd like to be treated. . . . Our school is a unique situation where we have pregnant young ladies who go to our school. We have special education children. We have the regular kids, and we have the drop-out recovery program . . . we're all equal. We all have an equal chance. And we have members of every gang at our school, and we hardly have any fights, and there are close to about 300 gangs in our city. We all get along. It's one big family unit it seems like. (Turnbull, Pereira, & Blue-Banning, 2000, p. 67)

Compassion and respect for one another's rights and needs are aspects of students' moral and prosocial development, a domain to which we turn now.

### MyEdLab Self-Check 3.3

**MyEdLab Application Exercise 3.3.** In this activity, you can apply what you have learned about children's social development to a second-grade writing activity.

## Moral and Prosocial Development

In the opening case study Lupita helps a classmate interpret a teacher aide's subtle message and assists two others with their puzzles. Such actions are examples of **prosocial behavior**, behavior aimed at benefiting others more than oneself. Prosocial behaviors—plus such traits as honesty, fairness, and concern about other people's rights and welfare—fall into the domain of **morality**. By and large, students who think and behave in moral and prosocial ways gain more support from their teachers and peers and, as a result, achieve greater academic and social success over the long run (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Spinrad & Eisenberg, 2009).

Morality and prosocial behavior are complex entities that appear to involve multiple parts of the brain. Certainly the mirror neurons mentioned earlier are involved, as they partially underlie people's ability to look at situations from someone else's perspective. But ultimately moral and prosocial actions also have components that involve distinctly different brain regions, including (a) *emotions* (e.g., affection and concern for others); (b) *complex reasoning abilities* (e.g., logically determining what actions are morally right and wrong); and (c) *implicit values and beliefs* (e.g., immediately "knowing" that an action is morally wrong but without having a good explanation as to why) (Dinh & Lord, 2013; Gallese et al., 2011; Moll et al., 2007; Young & Saxe, 2009).

### DEVELOPMENTAL TRENDS IN MORALITY AND PROSOCIAL BEHAVIOR

Most children behave more morally and prosocially as they grow older. Table 3.2 describes the forms that morality and prosocial behavior are apt to take at various grade levels. Some entries in the table reflect the following developmental trends.

- *Even very young children use internal standards to evaluate behavior.* Well before their first birthday, children show that they value prosocial behavior over antisocial behavior, and by age 3 they have some understanding that behaviors causing physical or psychological harm are inappropriate (Hamlin & Wynn, 2011; Helwig, Zelazo, & Wilson, 2001). By age 4 most children understand that causing harm to another person is wrong regardless of what authority figures might tell them and regardless of what consequences certain behaviors may or may not bring (Laupa & Turiel, 1995; Smetana, 1981; Tisak, 1993).
- *Children's capacity to respond emotionally to others' harm and distress increases over the school years.* Within the first 2 or 3 years of life, two emotions important for moral development emerge (Kochanska, Gross, Lin, & Nichols, 2002; M. Lewis & Sullivan, 2005). First, children occasionally show **guilt**—a feeling of discomfort when they know they've inflicted damage or caused someone else pain or distress. They also feel **shame**—a feeling of embarrassment or humiliation when they fail to meet their own or other people's standards for moral behavior. Both guilt and shame, although unpleasant emotions, are good signs that children are developing a sense of right and wrong and will work hard to correct their misdeeds (Eisenberg, 1995; Harter, 1999; Narváez & Rest, 1995).

Guilt and shame are the result of doing something wrong. In contrast, **empathy**—experiencing the same feelings as someone in unfortunate circumstances—appears in the absence of wrongdoing. Although the mirror neurons mentioned earlier may to some degree underlie human beings' ability to empathize, this ability continues to develop throughout childhood and adolescence (Eisenberg et al., 1995; Rizzolatti & Sinigaglia, 2008; Spinrad & Eisenberg, 2009). When empathy also evokes **sympathy**—whereby children not only assume another person's feelings but also have concerns for the individual's well-being—it tends to spur prosocial behavior (Batson, 1991; Eisenberg & Fabes, 1998; Malti, Gummerum, Keller, & Buchman, 2009).

- *Children increasingly distinguish between moral and conventional transgressions.* Virtually every culture discourages some behaviors—**moral transgressions**—because they cause damage or harm, violate human rights, or run counter to basic principles of equality, freedom, or justice. A cultural group typically also discourages certain other behaviors—**conventional transgressions**—that, although not unethical, violate widely held understandings about how one

hopes  
goals  
dreams  
happiness  
broken  
destroyed  
eliminated  
exterminated  
no steps forward  
no evolution  
no prosperity  
no hope  
But  
maybe  
perhaps  
except  
if we  
help  
together  
we stand  
a chance.

In this poem, Matt, a middle school student, shows empathy for victims of the Holocaust.

## DEVELOPMENTAL TRENDS

TABLE 3.2 • Moral Reasoning and Prosocial Behavior at Different Grade Levels

GRADE LEVEL	AGE-TYPICAL CHARACTERISTICS	EXAMPLE	SUGGESTED STRATEGIES
 <b>K-2</b>	<ul style="list-style-type: none"> <li>• Some awareness that behaviors causing physical or psychological harm are morally wrong</li> <li>• Ability to distinguish between behaviors that violate human rights and dignity versus those that violate social conventions</li> <li>• Guilt and shame about misbehaviors that cause obvious harm or damage</li> <li>• Some empathy for, as well as attempts to comfort, people in distress</li> <li>• Appreciation for the need to be fair; fairness seen as strict equality in how a desired commodity is divided</li> </ul>	When Jake pushes Otis off the ladder of a playground slide, several classmates are horrified. One child shouts, "That's wrong!" and three others rush to Otis's side to make sure he's not hurt.	<ul style="list-style-type: none"> <li>■ Make standards for behavior very clear.</li> <li>■ When students misbehave, give reasons that such behaviors are unacceptable, focusing on the harm and distress they have caused others (i.e., use <i>induction</i>, a strategy described later in the chapter).</li> <li>■ Encourage students to comfort others in times of distress.</li> <li>■ Model sympathetic responses; explain what you're doing and why you're doing it.</li> <li>■ Keep in mind that some selfish behavior is typical for the age-group; when it occurs, encourage perspective taking and prosocial behavior.</li> </ul>
 <b>3-5</b>	<ul style="list-style-type: none"> <li>• Knowledge of social conventions for appropriate behavior</li> <li>• Increasing empathy for unknown individuals who are suffering or needy</li> <li>• Recognition that one should strive to meet others' needs as well as one's own; growing appreciation for cooperation and compromise</li> <li>• Growing realization that fairness doesn't necessarily mean equality—that some people (e.g., peers with disabilities) may need more of a desired commodity than others</li> <li>• Increased desire to help others as an objective in and of itself</li> </ul>	At the suggestion of his third-grade teacher, 8-year-old Jeff acts as a "special friend" to Evan, a boy with severe physical and cognitive disabilities who joins the class for 2 or 3 days a week. Evan can't speak, but Jeff gives him things to feel and manipulate and talks to him whenever class activities allow conversation. And the two boys regularly sit together at lunch. Jeff comments, "Doing things that make Evan happy makes me happy, too."	<ul style="list-style-type: none"> <li>■ Make prosocial behaviors (e.g., sharing, helping others) a high priority in the classroom.</li> <li>■ Explain how students can often meet their own needs while helping others (e.g., when asking students to be "reading buddies" for younger children, explain that doing so will help them become better readers themselves).</li> <li>■ Use prosocial adjectives (e.g., <i>kind</i>, <i>helpful</i>) when praising altruistic behaviors.</li> </ul>
 <b>6-8</b>	<ul style="list-style-type: none"> <li>• Growing awareness that some rules and conventions are arbitrary; in some cases accompanied by resistance to these rules and conventions</li> <li>• Interest in pleasing and helping others, but with a tendency to oversimplify what "helping" requires</li> <li>• Tendency to believe that people in dire circumstances (e.g., homeless people) are entirely responsible for their own fate</li> </ul>	After the midwinter break, 13-year-old Brooke returns to school with several large nose rings and her hair styled into long, vertical spikes above her head. The school principal tells her that her appearance is inappropriate and insists that she go home to make herself more presentable. Brooke resists, claiming, "I have a right to express myself however I want!"	<ul style="list-style-type: none"> <li>■ Talk about how rules enable classrooms and other groups to run more smoothly.</li> <li>■ Involve students in group projects that will benefit their school or community.</li> <li>■ When imposing discipline for moral transgressions, accompany it with explanations about the harm that has been caused (i.e., use <i>induction</i>), especially when working with students who appear to have deficits in empathy and moral reasoning.</li> </ul>
 <b>9-12</b>	<ul style="list-style-type: none"> <li>• Increasing concern about doing one's duty and abiding by the rules of society as a whole, rather than simply pleasing certain authority figures</li> <li>• Realization that most rules and conventions serve useful purposes</li> <li>• Genuine empathy for people in distress</li> <li>• Belief that society has an obligation to help people in need</li> </ul>	Several high school students propose and establish a school chapter of Amnesty International, an organization dedicated to the preservation of human rights around the world. The group invites knowledgeable guest speakers from various countries and conducts several fundraisers to help combat abusive practices against women.	<ul style="list-style-type: none"> <li>■ Explore moral issues in social studies, science, and literature.</li> <li>■ Encourage community service as a way of engendering a sense of commitment to helping others. Ask students to reflect on their experiences through group discussions or written essays.</li> <li>■ Have students read autobiographies and other forms of literature that depict heroic figures who have actively worked to help people in need.</li> </ul>

Sources: Eisenberg, 1982; Eisenberg & Fabes, 1998; Farver & Branstetter, 1994; C. A. Flanagan & Faison, 2001; Gibbs, 1995; Gummerum, Keller, Takezawa, & Mata, 2008; D. Hart & Fegley, 1995; Hastings et al., 2007; Helwig & Jasiobedzka, 2001; Helwig et al., 2001; Hoffman, 2000; Kohlberg, 1984; Krebs & Van Hesteren, 1994; Kurtines, Berman, Ittel, & Williamson, 1995; Laupa & Turiel, 1995; M. Lewis & Sullivan, 2005; Nucci, 2009; Nucci & Weber, 1995; Rothbart, 2011; Rushton, 1980; Smetana & Braeges, 1990; Spinrad & Eisenberg, 2009; Turiel, 1983, 1998; Wainryb, Brehl, & Matwin, 2005; Yates & Youniss, 1996; Yau & Smetana, 2003; Youniss & Yates, 1999; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992.



should act (e.g., children shouldn't talk back to adults or burp at meals). Conventional transgressions are usually specific to a particular culture; in contrast, many moral transgressions are universal across cultures (Nucci, 2009; Smetana, 2006; Turiel, 2002).

Children's awareness of social conventions increases throughout the elementary school years (Helwig & Jasiobedzka, 2001; Laupa & Turiel, 1995; Nucci & Nucci, 1982). But especially as children reach adolescence, they don't always agree with adults about which behaviors constitute moral transgressions, which ones fall into the conventional domain, and which ones are simply a matter of personal choice. Hence, many adolescents resist rules they think are infringements on their personal freedoms—for instance, rules about clothing, hair style, and talking in class (Nucci, 2009; Smetana, 2005).

- *With age, reasoning about moral issues becomes increasingly abstract and flexible.* To probe children's thinking about moral issues, researchers sometimes present **moral dilemmas**, situations in which two or more people's rights or needs may be at odds and for which there are no clear-cut right or wrong responses. The scenario in the following exercise is an example.

## EXPERIENCING FIRSTHAND

### MARTIN'S PLIGHT

Imagine that you're a student in the ninth grade. You're walking quickly down the school corridor on your way to your math class when you see three boys from the so-called "popular" crowd cornering a small, socially awkward boy named Martin. The boys first make fun of Martin's thick glasses and unfashionable clothing, then they start taunting him with names such as "fag" and "retard." What do you do?

- a. You look the other way, pretending you haven't heard anything, and hurry on to class. If you were to stop to help, the boys might taunt you as well, and that will only make the situation worse.
- b. You shoot Martin a sympathetic look and then head to class so that you won't be late. Afterward, you anonymously report the incident to the principal's office, because you know that the boys' behaviors have violated your school's antibullying policy.
- c. You stop and say, "Hey, you jerks, cut it out! Martin's a really nice guy and doesn't deserve your insulting labels. Come on, Martin, let's go. We might be late for math class, so we need to hurry."

Looking for the moral high ground in this situation, you might very well have chosen Alternative *c*. But if you were a ninth grader—someone who might still be working hard to fit in with your peer group—is that *really* what you would do?

In his groundbreaking early research on moral development, Lawrence Kohlberg gave children and adults a variety of moral dilemmas and asked them both what they would do and why they would do it. Based on the hundreds of responses he obtained, Kohlberg proposed that as children grow older, they construct increasingly complex views of morality. In Kohlberg's view, development of moral reasoning is characterized by a sequence of six stages grouped into three general *levels* of morality: preconventional, conventional, and postconventional (see Table 3.3). Children with **preconventional morality** haven't yet adopted or internalized society's conventions regarding what things are right and wrong but instead focus largely on external consequences that certain actions might bring to themselves, as illustrated in Alternative *a* in the exercise. Kohlberg's second level, **conventional morality**, is characterized by general, often unquestioning obedience either to an authority figure's dictates or to established rules and norms, even when there are no consequences for disobedience. Alternative *b* in the exercise is an example: You report a violation of school rules to school authorities, but you don't want to be late to class—that would violate another school rule—and through your actions you don't jeopardize any good relationships you might have with the supposedly "popular" boys.

In contrast to the somewhat rigid nature of conventional morality, people at Kohlberg's third level, **postconventional morality**, view rules as useful but changeable mechanisms

## COMPARE/CONTRAST

TABLE 3.3 • The Three Levels and Six Stages of Moral Reasoning in Kohlberg's Theory of Moral Development

LEVEL	AGE RANGE	STAGE	NATURE OF MORAL REASONING
<b>Level I: Preconventional morality</b>	Seen in preschool children, most elementary school students, some junior high school students, and a few high school students	Stage 1: Punishment-avoidance and obedience	People make decisions based on what is best for themselves, without regard for others' needs or feelings. They obey rules only if established by more powerful individuals; they may disobey if they aren't likely to get caught. "Wrong" behaviors are those that will be punished.
		Stage 2: Exchange of favors	People recognize that others also have needs. They may try to satisfy others' needs if they can satisfy their own needs at the same time (e.g., "You scratch my back; I'll scratch yours"). They continue to define right and wrong primarily in terms of consequences to themselves.
<b>Level II: Conventional morality</b>	Seen in a few older elementary school students, some junior high school students, and many high school students (Stage 4 typically does not appear before high school)	Stage 3: Good boy/good girl	People make decisions based on what actions will please others, especially authority figures (e.g., teachers, popular peers). They are concerned about maintaining relationships through sharing, trust, and loyalty, and they consider other people's perspectives and intentions when making decisions.
		Stage 4: Law and order	People look to society as a whole for guidelines about right and wrong. They know that rules are necessary for keeping society running smoothly and believe that it's their duty to obey the rules. However, they perceive rules to be inflexible; they don't necessarily recognize that as society's needs change, rules should change as well.
<b>Level III: Postconventional morality</b>	Rarely seen before college (Stage 6 is extremely rare even in adulthood)	Stage 5: Social contract	People recognize that rules represent agreements among many individuals about appropriate behavior. Rules are seen as useful mechanisms that maintain the general social order and protect individual rights, rather than as absolute dictates that must be obeyed simply because they are the law. People also recognize the flexibility of rules; rules that no longer serve society's best interests can and should be changed.
		Stage 6: Universal ethical principles	Stage 6 is a hypothetical, ideal stage that few people ever reach. People in this stage adhere to a few abstract, universal principles (e.g., equality of all people, respect for human dignity, commitment to justice) that transcend specific norms and rules. They answer to a strong inner conscience and willingly disobey laws that violate their own ethical principles.

Sources: Colby & Kohlberg, 1984; Colby, Kohlberg, Gibbs, & Lieberman, 1983; Kohlberg, 1976, 1984, 1986; Reimer, Paolitto, & Hersh, 1983; Snarey, 1995.

that ideally can maintain the general social order and protect human rights and safety; rules aren't absolute dictates that must be obeyed without question. These people live by their own abstract principles about right and wrong and may disobey rules inconsistent with these principles. Alternative *c* has an element of postconventional reasoning: You're more concerned about protecting Martin's physical and psychological safety than you are about getting to class on time.

Considerable research on moral development has followed on the heels of Kohlberg's work. Some of it supports Kohlberg's proposed sequence: Generally speaking, people seem to make advancements in the order Kohlberg proposed (Boom, Brugman, & van der Heijden, 2001; Colby & Kohlberg, 1984; Snarey, 1995; Stewart & Pascual-Leone, 1992). And as Kohlberg suggested, moral development emerges out of children's own, self-constructed beliefs—beliefs they often revisit and revise over time. Nevertheless, his theory has several weaknesses. For one thing, Kohlberg underestimated young children, who, as you discovered earlier, acquire some internal standards of right and wrong long before they reach school age. Also, Kohlberg's stages encompassed a mixture of moral issues (e.g., causing harm) and social conventions (e.g., having rules to help society run smoothly), but as we've seen, children distinguish between these two domains, and their views about each domain may change at different times and in different ways (Nucci, 2001, 2009). Furthermore, Kohlberg's theory pays little attention to a second important aspect of morality—*showing compassion for and helping* other people—and its focus is largely on *reasoning*, with little consideration of people's moral *behaviors* (Gilligan, 1982, 1987; P. L. Hill & Roberts, 2010; J. G. Miller, 2007). Finally, Kohlberg largely overlooked situational factors that young people take into account when deciding what's morally right and wrong in specific contexts (more about these factors in a moment).

Many contemporary developmental psychologists believe that moral reasoning involves general *trends* rather than distinct stages. It appears that children and adolescents gradually construct several different standards that guide their moral reasoning and decision making in various situations. Such standards include the need to address one's own personal interests, consideration of other people's needs and motives, a desire to abide by society's rules and conventions, and, perhaps eventually, an appreciation for abstract ideals regarding human rights and society's overall needs (Killen & Smetana, 2008; Krebs, 2008; Rest, Narvaez, Bebeau, & Thoma, 1999). With age, youngsters increasingly apply more advanced standards, but even a fairly primitive one—satisfying one's own needs without regard for others—may occasionally take priority (Rest et al., 1999; Turiel, 1998).

- *As children get older, they increasingly behave in accordance with their self-constructed moral standards, but other factors come into play as well.* On average, children and adolescents with more advanced moral reasoning behave in more moral and prosocial ways (e.g., Blasi, 1980; P. A. Miller, Eisenberg, Fabes, & Shell, 1996; Paciello et al., 2008). However, the correlation between moral reasoning and moral behavior isn't an especially strong one. Youngsters' perspective-taking ability and emotions (shame, guilt, empathy, sympathy) also influence their decisions to behave morally or otherwise (Batson, 1991; Damon, 1988; Eisenberg, Zhou, & Koller, 2001). And although young people may truly want to do the right thing, they may also be concerned about the consequences for themselves in specific situations—for instance, how much personal sacrifice will be involved and how much various actions will gain other people's approval or respect (Batson & Thompson, 2001; Cillessen et al., 2011; Hawley, 2014; Narváez & Rest, 1995; Wentzel, Filisetti, & Looney, 2007).

Finally, sense of self seems to be an important factor affecting one's inclinations to act morally and prosocially. Young people must believe they're actually capable of helping other people—in other words, they must have high self-efficacy about their ability to “make a difference” (Narváez & Rest, 1995). Furthermore, in adolescence, some of them begin to integrate a commitment to moral values into their overall sense of identity: They think of themselves as moral, caring individuals who make other people's rights and well-being a high priority (Blasi, 1995; Hastings, Utendale, & Sullivan, 2007; Thorkildsen et al., 2008).

## FACTORS INFLUENCING MORAL AND PROSOCIAL DEVELOPMENT

To some degree, advanced moral reasoning depends on *cognitive development*. In particular, it depends on the ability to think simultaneously about multiple issues (e.g., about various people's motives and intentions in a situation) and also on the ability to comprehend such abstract ideals as justice and basic human rights. However, cognitive development doesn't *guarantee* moral development. It's quite possible to think abstractly about academic subject matter and yet reason in a self-centered, preconventional manner (Kohlberg, 1976; Nucci, 2006, 2009; Turiel, 2002).

Children's social and cultural environments have a significant influence on their moral and prosocial development. For example, when children see adults or peers being generous and showing concern for others, they tend to do likewise (Hoffman, 2000; Rushton, 1980; Spinrad & Eisenberg, 2009). And when they watch television shows that emphasize perspective taking and prosocial actions, they're more inclined to exhibit such behaviors themselves (Dubow, Huesmann, & Greenwood, 2007; Hearold, 1986; Rushton, 1980; Singer & Singer, 1994). Prosocial video games, too, seem to have a positive impact (Greitemeyer, 2011; Prot et al., 2014). Ideally, society's prosocial messages must be consistently conveyed through other people's behaviors. Children do *not* make advancements in moral reasoning and behavior simply by hearing adults advocate certain moral values—say, through a short “character education” program (Higgins, 1995; N. Park & Peterson, 2009; Turiel, 1998).

Children also tend to make gains in moral and prosocial development when adults consistently use **induction**, asking children to think about the harm and distress that some of their behaviors have caused others (Hoffman, 2000; Rothbart, 2011). Induction is victim-centered: It helps youngsters focus on others' distress and recognize that they themselves have been the cause. Consistent use of induction in disciplining children, especially when accompanied by *mild* punishment for misbehavior—for instance, insisting that children make amends for their



MyEdLab

### Video Example 3.6.

In this video, four students give varying reasons why it's wrong for a boy to cheat on a history test. What important difference do you notice between the two younger students' reasons and those of the two older students?

wrongdoings—appears to promote compliance with rules and foster the development of empathy, compassion, and altruism (G. H. Brody & Shaffer, 1982; Hoffman, 1975; Nucci, 2001; Rushton, 1980).

Yet another factor that appears to promote moral and prosocial advancements is *disequilibrium*—in particular, encountering moral dilemmas and arguments that children can't adequately address with their current moral standards and viewpoints. For instance, classroom discussions of controversial topics and moral issues can promote increased perspective taking and a gradual transition to more advanced reasoning (DeVries & Zan, 1996; Power, Higgins, & Kohlberg, 1989; Schlaefli, Rest, & Thoma, 1985). As Kohlberg suggested, children *construct* (rather than absorb) their moral beliefs; disequilibrium can spur them to revise their beliefs in ways that allow them to consider increasingly complex moral issues.

## DIVERSITY IN MORAL AND PROSOCIAL DEVELOPMENT

Some diversity in moral and prosocial development is, of course the result of differences in children's environments. But biology seems to be involved as well. For example, other things being equal, children who have a somewhat fearful, anxious temperament in infancy tend to show more guilt and empathy in the early elementary grades than their less anxious classmates. And as children grow older, the degree to which they show effortful control—an ability to inhibit selfish and other unproductive impulses—appears to be a factor in their acquisition of a moral conscience (Eisenberg, Spinrad, & Sadovsky, 2006; Kochanska, Tjebkes, & Forman, 1998; Rothbart, 2011).

Genetically based disabilities, too, come into the picture. For example, certain human genes seem to give rise to the development of brain abnormalities that, in turn, predispose their owners to antisocial behavior (Raine, 2008; Viding & McCrory, 2012).

**Gender differences.** Researchers have observed minor gender differences in moral and prosocial development. For instance, on average, girls are more likely than boys to feel guilt and shame—in part because they're more willing to take personal responsibility for their misdeeds. Girls are also more likely to feel empathy for people in distress (Alessandri & Lewis, 1993; Lippa, 2002; A. J. Rose, 2002; Zahn-Waxler & Robinson, 1995).

Historically, researchers have disagreed about the extent to which girls and boys *reason* differently about situations involving moral issues. In his work with college students, Kohlberg found that males reasoned at a slightly more advanced level than females (Kohlberg & Kramer, 1969). In response, psychologist Carol Gilligan argued that Kohlberg's stages don't adequately describe female moral development (Gilligan, 1982, 1987; Gilligan & Attanucci, 1988). She suggested that Kohlberg's stages reflect a *justice orientation*—an emphasis on fairness and equal rights—that characterizes males' moral reasoning. In contrast, females are socialized to take a *care orientation* toward moral issues—that is, to focus on interpersonal relationships and take responsibility for others' well-being. To see how these two orientations might play out differently, try the following exercise.

### EXPERIENCING FIRSTHAND

#### THE PORCUPINE DILEMMA

Consider the following scenario:

A group of industrious, prudent moles have spent the summer digging a burrow where they will spend the winter. A lazy, improvident porcupine who has not prepared a winter shelter approaches the moles and pleads to share their burrow. The moles take pity on the porcupine and agree to let him in. Unfortunately, the moles did not anticipate the problem the porcupine's sharp quills would pose in close quarters. Once the porcupine has moved in, the moles are constantly being stabbed. (Meyers, 1987, p. 141, adapted from Gilligan, 1985)

What do you think the moles should do? Why?

According to Gilligan, males are apt to view the problem as involving a violation of someone's rights: The moles own the burrow and so can legitimately evict the porcupine. In contrast, females are more likely to show compassion, perhaps suggesting that the moles cover the porcupine with a blanket so that his quills won't annoy anyone (Meyers, 1987).

Gilligan raised a good point: Males and females are often socialized quite differently. Furthermore, by including compassion for other human beings as well as consideration for their rights, Gilligan broadened our conception of what morality *is* (L. J. Walker, 1995). But in fact, most research studies *don't* find major gender differences in moral reasoning (Eisenberg, Martin, & Fabes, 1996; Nunner-Winkler, 1984; L. J. Walker, 1991). And as Gilligan herself has acknowledged, males and females alike typically reveal concern for both justice and compassion in their reasoning (L. M. Brown, Tappan, & Gilligan, 1995; Gilligan & Artanucci, 1988; Turiel, 1998).


**Cultural and ethnic differences.** Virtually all cultures worldwide acknowledge the importance of individual rights and fairness (reflecting a *justice* orientation) and of compassion for others (reflecting a *care* orientation). Yet until recently researchers have largely overlooked certain other values that may be key components of morality in certain cultures:

- *Loyalty to one's own group*, with a sense of “all for one, and one for all,” possibly accompanied by feelings of animosity toward other groups
- *Respect for and obedience to authority figures*, with willing acceptance of a subordinate position in a social decision-making hierarchy
- *Sacredness of certain beings, objects, or life in general*, with unswerving reverence and devotion to these things
- *Liberty*, with preservation of everyone's individual choices and decision making taking precedence over any needs of the larger group (Haidt, 2012)

People can't simultaneously be “moral” in all six ways; for instance, obedience to authority figures conflicts with personal liberties, and loyalty to one's own group can sometimes diminish one's respect for the rights of *other* groups. Accordingly, different cultural groups prioritize these various elements somewhat differently (Haidt, 2012; J. G. Miller, 2007). For example, in much of North America, helping others (or not) is considered to be a voluntary choice—reflecting respect for individual liberties—but in some societies (e.g., in many Asian and Arab countries) it is one's moral *duty* to help people in need. Such a sense of duty, which is often coupled with a strong sense of loyalty to family and the community, can lead to considerable prosocial behavior (X. Chen et al., 2009; Markus & Kitayama, 1991; Rubin et al., 2010).


Some diversity is also seen in the behaviors that cultural groups view as moral transgressions versus those they see as conventional transgressions (Haidt, 2012; Nucci, 2001, 2009). For example, in mainstream Western culture, how one dresses is largely a matter of convention and personal choice. In some deeply religious groups, however, certain forms of dress (e.g., head coverings) are seen as moral imperatives. As another example, in mainstream Western culture, telling lies to avoid punishment for inappropriate behavior is considered morally wrong, but it's a legitimate way of saving face in certain other cultures (Triandis, 1995). As teachers, then, we must remember that our students' notions of morally appropriate and inappropriate behaviors may sometimes be quite different from our own. At the same time, we must *never* accept behaviors that violate such basic principles as equality and respect for other people's rights and well-being.

Chapter 4 describes many gender differences and their possible origins, including socialization practices.

 Keep in mind that students from diverse cultures may have different ideas about behaviors that are morally desirable (and in some cases mandatory) versus behaviors that are morally wrong. If necessary, explain to a student in private that some behaviors considered appropriate in his or her culture are unacceptable in your classroom because they infringe on other people's rights and well-being.

## ENCOURAGING MORAL AND PROSOCIAL DEVELOPMENT AT SCHOOL

As teachers, we play an important role in helping children and adolescents acquire the beliefs, values, and behaviors critical to their effective participation in a democratic and compassionate society—a society in which everyone's rights are respected and everyone's needs are taken into consideration. Following are several general suggestions based on research findings.

-  *Encourage perspective taking, empathy, and prosocial behaviors.* Systematic efforts to promote perspective taking, empathy, and such prosocial skills as sharing and helping others do seem to enhance students' moral and prosocial development (Chernyak & Kushnir, 2013; Nucci, 2009; Spinrad & Eisenberg, 2009). Perspective taking and empathy can and should be encouraged in the study of academic subject matter as well (Brophy, Alleman, & Knighton, 2009; Davison, 2011). For example, Figure 3.4 shows two writing samples created during history lessons about slavery in the pre-Civil War United States. The reaction paper on the left was written by 10-year-old Charmaine, whose fifth-grade class had been watching

**FIGURE 3.4** Two examples of perspective taking related to slavery in the pre-Civil War United States.

*Roots II ON THE BOAT TO AMERICA*

I could feel the pain Kunta-Kinte was having. Once I had a paper cut and when in the ocean it hurt more than a wasp sting, and that was just paper cut. I can't even imagine the pain or fright that Kunta-Kinte had being taken from his family and home. Or his parents hurt finding out that their first son was being taken to be a slave, their son that had just become a man. I also am horrified about how they treated women. Baby-warmers! She makes angry!

## My Diary

July 1, 1700

Dear Diary - Today was a scorcher. I could not stand it and I was not even working. The slaves looked so hot. I even felt for them. and it is affecting my tobacco. It's too hot too early in the season. The tobacco plants are not growing quickly enough. I can only hope that it rains. Also today Robert Smith invited me to a ball at his house in two days. In 5 days I am going to have my masked ball. We mailed out the invitations two days ago. My wife, Beth, and I thought of a great idea of a masked ball. We will hire our own band.

July 2, 1700

Dear Diary - It was another scorcher. I wish it would cool down. I don't think the slaves can handle it. It looked like some of them would faint. I had them drink more water. Later in the day a nice breeze came up. Then I gave them the rest of the day off. Also today we planned a trip to Richmond. . . .

July 5, 1700

Dear Diary - Today we had to wake up before the sun had risen. After a breakfast of hot cakes, eggs, and sausage, we headed back home. We got there at the end of the morning. When I got back it was very, very hot. One of the slaves fainted so I gave him the rest of the day off, fearing revolt. I also gave them extra food and water. It makes me think that they are only people too. I know that this is unheard of but it really makes me think.

*Roots*, a miniseries about a young African man (Kunta Kinte) who is captured and brought to America as a slave. Charmaine acknowledges that she can't fully grasp Kunta Kinte's physical pain. Even so, she talks about his "pain" and "fright" and about his parents' "hurt" at losing their firstborn son, and she is incensed by some colonists' view of African women as little more than "beebie [baby] warmers." The diary entries on the right were written by 14-year-old Craig, whose ninth-grade history teacher asked his class to write journal entries that might capture the life of a Southern plantation owner. Notice that Craig tries to imagine someone else (a plantation owner) taking *other people's* perspectives (those of slaves). Such two-tiered perspective taking is similar to recursive thinking but in this case involves thinking "I think that you think that someone else thinks. . . ."

- Give reasons for why some behaviors are unacceptable. Although it's important to impose consequences for immoral and antisocial behaviors, punishment by itself often focuses children's attention primarily on their own hurt and distress. To promote moral and prosocial development, we must accompany punishment with induction, focusing students' attention on the hurt and distress their behaviors have caused *others* (Hoffman, 2000; Nucci, 2009; M. Watson, 2008). For example, we might describe how a behavior harms someone else either physically ("Having your hair pulled the way you just pulled Mai's can really be painful") or emotionally ("You hurt John's feelings when you call him names like that"). We might also show students how they have caused someone else inconvenience ("Because you ruined Marie's jacket, her parents are making her work around the house to earn the money for a new one"). Still another approach is to explain someone else's perspective, intention, or motive ("This science project you've just ridiculed may not be as fancy as yours, but I know that Jake spent many hours working on it and is quite proud of what he's done").

One behavior we must explicitly and consistently discourage is *cheating* in its various forms, whether it be submitting a research paper downloaded from the Internet (i.e., plagiarism), copying other students' responses to quizzes or homework, or giving friends unfair advance notice of test questions. Sadly, students don't always see cheating as being a violation of moral standards (L. H. Anderman, Freeman, & Mueller, 2007; Honz, Kiewra, & Yang, 2010). Perhaps they're trying to help a friend, they say, or perhaps they see an assignment as being a waste of time or hopelessly beyond their ability levels. Not only does cheating hinder students' classroom learning—students gain very little from copying other people's work—but it is also dishonest and therefore immoral. Several strategies can potentially discourage cheating:

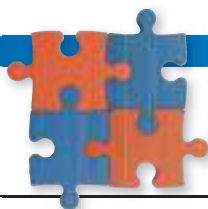
- Explain in clear, concrete terms what cheating is—for example, that it includes not only representing another person's work as one's own but also giving certain classmates an unfair advantage over others.
- Contrast cheating with legitimate collaboration, in which everyone learns something and the submitted work is honestly represented as a joint effort.
- Independently verify suspected instances of cheating (e.g., by searching the Internet for a document that you think a student might have copied word for word).
- Provide enough guidance and support that students can reasonably accomplish assigned tasks on their own. (L. H. Anderman et al., 2007; Bellanca & Stirling, 2011; Honz et al., 2010; Lenski, Husemann, Trautwein, & Lüdtke, 2010)
- *Expose students to numerous models of moral and prosocial behavior.* Children and adolescents are more likely to exhibit moral and prosocial behavior when they see other people (including their teachers!) behaving in moral rather than immoral ways. Powerful models of moral behavior can be found in literature as well—for instance, in some age-appropriate children's books and in such classics as Harper Lee's *To Kill a Mockingbird* and Nathaniel Hawthorne's *The Scarlet Letter*. Works of fiction are especially likely to have this beneficial effect when they give readers a good sense of what various characters are thinking and feeling, thus enhancing readers' *theory of mind* (Ellenwood & Ryan, 1991; Kidd & Castano, 2013; Nucci, 2001).
- *Engage students in discussions of moral issues related to academic subject matter.* Social and moral dilemmas often arise within the school curriculum. Consider the following questions that might emerge in discussions about academic topics:
  - Is military retaliation for acts of terrorism justified if it involves killing innocent people?
  - Should laboratory rats be used to study the effects of cancer-producing agents?
  - Was Hamlet justified in killing Claudius to avenge the murder of his father?
 Such dilemmas don't always have clear-cut right or wrong answers. As teachers, we can encourage student discussions of such issues in several ways:
  - Create a trusting and nonthreatening classroom atmosphere in which students can express their beliefs without fear of censure or embarrassment.
  - Help students identify all aspects of a dilemma, including the needs and perspectives of the various individuals involved.
  - Encourage students to explore their reasons for thinking as they do—that is, to clarify and reflect on the moral principles on which they're basing their judgments. (Reimer, Paolitto, & Hersh, 1983)
- *Get students actively involved in community service.* As we've seen, students are more likely to adhere to strong moral principles when they have high self-efficacy for helping others and when they have integrated a commitment to moral ideals into their overall sense of identity. Such self-perceptions don't appear out of the blue, of course. Children are more likely to have high self-efficacy for prosocial activities when they have the guidance and support they need to carry out the activities successfully. And they're more likely to integrate moral and prosocial values into their overall sense of self when they become actively involved in service to others, ideally even before they reach puberty (Hastings et al., 2007; Nucci, 2001; Youniss & Yates, 1999). Through ongoing community service activities—sometimes collectively referred to as **service learning**—elementary and secondary students alike learn

that they have the skills and the responsibility for helping people in dire straits and in other ways making the world a better place in which to live. In the process, they also begin to think of themselves as concerned, compassionate, and moral citizens who have an obligation to help those less fortunate than themselves (J. P. Allen & Antonishak, 2008; Kahne & Sporte, 2008; Thorkildsen et al., 2008).

#### MyEdLab Self-Check 3.4

**MyEdLab Application Exercise 3.4.** In this exercise, you can apply what you have learned to identify age-appropriate strategies for enhancing students' moral and prosocial development.

## 3



## What Have You Learned?

We now return to the learning outcomes listed at the beginning of the chapter and identify key ideas related to each one.

**3.1: Describe the nature and origins of children's temperaments and personality characteristics, and explain how you might adapt your classroom practices to students' diverse personalities.** Children exhibit distinct personalities—consistent ways of behaving across a wide range of situations—long before they begin school. To some degree their personalities reflect their temperaments—their genetic predispositions to be active or subdued, outgoing or shy, adventurous or fearful, and so on. Yet environmental factors affect personality as well: The quality of parent–child emotional bonds (reflecting attachment), the nature of caregivers' parenting styles, and general cultural norms and expectations all play roles in molding children's characteristic ways of behaving.

Students are most likely to thrive and succeed when there is a *goodness of fit* between students' temperaments and personality traits, on the one hand, and classroom activities and assignments, on the other. For example, temperamentally quiet and self-controlled students may do well with independent paper-and-pencil tasks, more energetic students may be more productive during hands-on activities, and students with poor impulse control may require greater-than-average guidance and supervision.

**3.2: Explain how students' sense of self is apt to influence their behavior and how you can help students develop healthy self-perceptions.** As young people progress through childhood and adolescence, they construct and continually revise their *sense of self*—their perceptions, beliefs, judgments, and feelings about themselves. Children derive their self-views not only from their own experiences (e.g., their successes and failures) but also from other people's behaviors and from the achievements of social and ethnic groups to which they belong. As children reach adolescence, their sense of self increasingly incorporates abstract qualities and, eventually, a general sense of identity regarding who they are as people, what things they find important, and what goals they hope to accomplish.

With adolescence, too, come heightened concern about other people's opinions of oneself (the imaginary audience phenomenon) and an exaggerated belief in one's uniqueness relative to others (the personal fable phenomenon). Perhaps partly as a result of the personal fable—but also as a result of incomplete brain maturation—many adolescents take foolish risks and engage in dangerous activities.

As teachers, we must provide the support students need to be successful and give them feedback that engenders optimism about future accomplishments. And working as either individuals or a team, we can offer and advocate for activities that channel teenagers' desires for risk and social status into safe, productive behaviors.

**3.3: Apply your knowledge of peer relationships and social cognition as you identify strategies for promoting productive social skills and addressing student aggression.** Productive peer relationships (especially friendships) serve several important functions: They (a) provide a testing ground for emerging social skills, (b) introduce children to new physical and cognitive skills, (c) offer emotional support in times of trouble or uncertainty, and, ideally, (d) promote socially and culturally appropriate behaviors. In the middle school and high school years, many students become members of larger social groups (e.g., cliques, subcultures, or gangs) and form romantic relationships. Yet some students are consistently rejected or neglected by their classmates, and these students may especially need teachers' friendship and support.

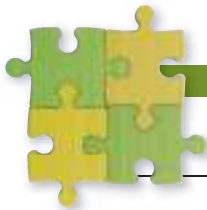
Most children and adolescents actively try to make sense of their social world. With age, such social cognition becomes increasingly complex and insightful, allowing young people to interact effectively with adults and peers alike. But some students have trouble interpreting social cues correctly and may have few effective social skills. Furthermore, some students engage in either physical or psychological aggression toward certain peers, perhaps as a way of gaining prestige and status within their social group. As teachers, then, we may sometimes need to monitor and guide students' interpersonal interactions; for example, we must explain that psychological



bullying (e.g., posting defamatory material on the Internet) is as harmful and inappropriate as physical aggression. We should also take active steps to promote communication and interaction across individuals and groups with diverse backgrounds and abilities.

- **3.4: Describe typical advancements in moral and prosocial development over the course of childhood and adolescence, and identify strategies for promoting moral and prosocial development at school.** As children move through the grade levels, most acquire an increasingly sophisticated sense of right and wrong. This developmental progression is the result of many things, including increasing capacities

for abstract thought and empathy, an evolving appreciation for human rights and other people's welfare, and ongoing encounters with moral dilemmas and problems. Even at the high school level, however, students don't always take the moral high road, as personal needs and self-interests almost invariably enter into their moral decision making to some degree. As teachers, we can help students develop more advanced moral reasoning and increasingly prosocial behavior by giving them reasons why certain behaviors are unacceptable, encouraging them to recognize how others feel in various situations, exposing them to models of moral behavior, challenging their thinking with moral dilemmas, and providing opportunities for community service and other prosocial activities.



## Practice For Your Licensure Exam

### The Scarlet Letter



MyEdLab

#### Video Example 3.7.

You can observe Ms. Southam's class discussion here.

Ms. Southam's 11th-grade English class has been reading Nathaniel Hawthorne's *The Scarlet Letter*. Set in 17th-century Boston, the novel focuses largely on two characters who have been carrying on an illicit love affair: Hester Prynne, a young woman who has not seen or heard from her husband for the past 2 years, and the Reverend Arthur

Dimmesdale, a pious and well-respected local preacher. When Hester becomes pregnant, she is imprisoned for adultery and soon bears a child. The class is currently discussing Chapter 3, in which the governor and town leaders, including Dimmesdale, are urging Hester to name the baby's father.

**Ms. Southam:** The father of the baby . . . How do you know it's Dimmesdale . . . the Reverend Arthur Dimmesdale? . . . What are the clues in the text in Chapter 3? . . . Nicole?

**Nicole:** He acts very withdrawn. He doesn't even want to be involved with the situation. He wants the other guy to question her, because he doesn't want to look her in the face and ask her to name him.

**Ms. Southam:** OK. Anything else? . . .

**Student:** The baby.

**Ms. Southam:** What about the baby?

**Student:** She starts to cry, and her eyes follow him.

**Ms. Southam:** That is one of my absolutely favorite little Hawthornisms.

Ms. Southam reads a paragraph about Dimmesdale and then asks students to jot down their thoughts about him. She walks around the room, monitoring what students are doing until they appear to have finished writing.

**Ms. Southam:** What pictures do you have in your minds of this man . . . if you were directing a film of *The Scarlet Letter*?

**Mike:** I don't have a person in mind, just characteristics. About five-foot-ten, short, well-groomed hair, well dressed. He looks really nervous and inexperienced. Guilty look on his face. Always nervous, shaking a lot.

**Ms. Southam:** He's got a guilty look on his face. His lips always trembling, always shaking.

**Mike:** He's very unsure about himself.

**Matt:** Sweating really bad. Always going like this. [He shows how Dimmesdale might be wiping his forehead.] He does . . . he has his hanky . . .

**Ms. Southam:** Actually, we don't see him mopping his brow, but we do see him doing what? What's the action? Do you remember? If you go to the text, he's holding his hand over his heart, as though he's somehow suffering some pain.

**Student:** Wire-framed glasses . . . I don't know why. He's like . . .

**Mike:** He's kind of like a nerd-type guy . . . short pants.

**Ms. Southam:** But at the same time . . . I don't know if it was somebody in this class or somebody in another class . . . He said, "Well, she was sure *worth* it." Worth risking your immortal soul for, you know? . . . Obviously she's sinned, but so has he, right? And if she

was worth it, don't we also have to see him as somehow having been worthy of her risking *her* soul for this?

*Student:* Maybe he's got a good personality . . .

*Ms. Southam:* He apparently is, you know, a spellbinding preacher. He really can grab the crowd.

*Student:* It's his eyes. Yeah, the eyes.

*Ms. Southam:* Those brown, melancholy eyes. Yeah, those brown, melancholy eyes. Absolutely.

**1. Constructed-response question:**

In this classroom dialogue Ms. Southam and her students speculate about what the characters in the novel, especially Arthur Dimmesdale, might be thinking and feeling. In other words, they are engaging in social cognition.

A. Identify two examples of student statements that show social cognition.

B. For each example you identify, explain what it reveals about the speaker's social cognition.

**2. Multiple-choice question:**

Ms. Southam does several things that are apt to enhance students' perspective-taking ability. Which one of the following is the best example?

- She models enthusiasm for the novel ("That is one of my absolutely favorite little Hawthornisms").
- She walks around the room as the students write down their thoughts about Dimmesdale.
- She points out that Dimmesdale is "holding his hand over his heart, as though he's somehow suffering some pain."
- She agrees with Mike's description of Dimmesdale as having a guilty look on his face.

MyEdLab Licensure Exam 3.1

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**PRAXIS** Go to Appendix C, "Matching Book Content to the Praxis Principles of Learning and Teaching Tests," to discover sections of this chapter that may be especially applicable to the Praxis tests.

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ifoto/Fotolia

# 4

## Group Differences

### Learning Outcomes



- 4.1** Describe frequently observed between-group differences and within-group variability for various cultural and ethnic groups; also describe the teacher attitudes and strategies that underlie culturally responsive teaching.
- 4.2** Describe the nature and origins of typical gender differences in school-age children and adolescents, and explain how you might best accommodate such differences in your classroom.
- 4.3** Identify challenges that students from low-income families often face; also identify several strategies through which you can foster their resilience and help them be successful at school.
- 4.4** Explain how you might recognize students who are at risk for academic failure and dropping out of school, and identify strategies for helping these students stay in school and get on the path to academic and social success.

## CASE STUDY: WHY JACK WASN'T IN SCHOOL

Jack was a Native American seventh grader who lived in the Navajo Nation in the American Southwest. Although he enjoyed school, worked hard in his studies, and got along well with his classmates, he had been absent from school all week. In fact, he had been absent from home as well, and his family (who didn't have a telephone) wasn't sure exactly where he was.

Jack's English teacher described the situation to Donna Deyhle, an educator who had known Jack for many years:

That seventh grader was away from home for 5 days, and his parents don't care! . . . Almost one-third of my Navajo students were absent this week. Their parents just don't support their education. How can I teach when they are not in my classes? (Deyhle & LeCompte, 1999, p. 127)

A few days later, Jack's sister explained why her parents had eventually begun to look for Jack:

He went to see [the film] *Rambo II* with friends and never came home. If he was in trouble we would know. But now the family needs him to herd sheep tomorrow. (Deyhle & LeCompte, 1999, p. 127)

It was spring—time for the family to plant crops and shear the sheep—and all family members needed to help out. Jack's whereabouts were soon discovered, and the family stopped by Donna's house to share the news:

Jack's dad said, "We found him." His mother turned in his direction and said teasingly, "Now maybe school will look easy!" Jack stayed at home for several days, helping with the irrigation of the cornfield, before he decided to return to school. (Deyhle & LeCompte, 1999, p. 128)

- Did you interpret Jack's absence from school in the same way his English teacher did, concluding that "his parents don't care" about his education? If so, how might your own cultural background have influenced your conclusion?
- Like most parents, Jack's mother and father cared deeply about his school achievement and general well-being. What alternative explanations might account for their behaviors in this situation?



To fully understand what transpired in Jack's family, we need to know a couple of facts about Navajo culture. First, Navajo people place high value on individual autonomy: Even children must be self-sufficient and make their own decisions (Deyhle & LeCompte, 1999). From this perspective, good parenting doesn't mean demanding that children do certain things or behave in certain ways; instead, Navajo parents offer suggestions and guidance, perhaps in the form of gentle teasing ("Now maybe school will look easy!"), that nudge children toward productive choices. But in addition to individual autonomy, Navajos value cooperation and interdependence, believing that community members

## CHAPTER OUTLINE

### Cultural and Ethnic Differences

Navigating Different Cultures at Home and at School

Examples of Cultural and Ethnic Diversity

Creating a Culturally Inclusive Classroom Environment

### Gender Differences

Research Findings Regarding Gender Differences

Origins of Gender Differences

Making Appropriate

Accommodations for Gender Differences

### Socioeconomic Differences

Challenges Associated with Poverty

Fostering Resilience

Working with Homeless Students

### Students at Risk

Characteristics of Students at Risk

Why Students Drop Out

Supporting Students at Risk


should work together for the common good; hence Jack's highest priority was helping his family. Such respect for both individual decision making and cooperative interdependence is seen in many other Native American communities as well (Frankland, Turnbull, Wehmeyer, & Blackmountain, 2004; Rogoff, 2003; Tyler et al., 2008).

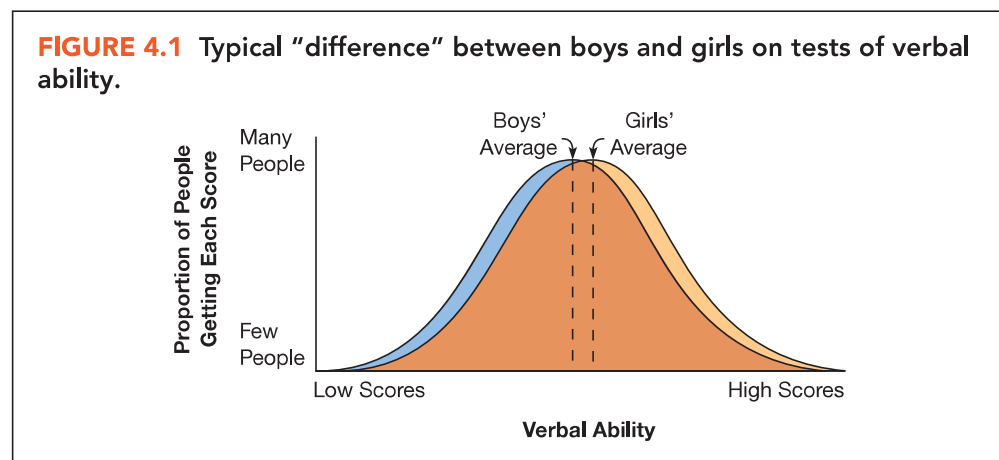
The attitude of Jack's English teacher may seem somewhat troubling. Her belief that the Navajo students' parents "just don't support their education" seems to be based on assumptions, rather than knowledge of their parents' actual values. As we will see in this chapter, if teachers hold such beliefs, they can begin to treat some students differently from others, which could lead to subsequent psychological and behavioral problems for Navajo students (and other students as well) (Galliher, Jones, & Dahl, 2011).

In this chapter we'll look in depth at **group differences**—differences we're apt to see *on average* among students of diverse cultural and ethnic groups, different genders, and different socioeconomic backgrounds. As we do so, we must keep in mind three very important points. First, *a great deal of individual variability exists within any group*. We'll be examining research regarding how students of different groups behave *on average*, even though many students within each group are not at all like those averages. Second, *a great deal of overlap typically exists between two groups*. Consider gender differences in verbal ability as an example. Many research studies have found girls to have slightly higher verbal ability than boys (Halpern & LaMay, 2000). The difference is often statistically significant—that is, it probably wasn't a one-time-in-a-hundred fluke that happened simply by chance. Yet the average difference between girls and boys in overall verbal ability is quite small, with a great deal of overlap between the sexes. Figure 4.1 shows the typical overlap between girls and boys on general measures of verbal ability. Notice that some boys (those whose scores fall in the rightmost part of their curve) have higher verbal ability than most of their female peers despite the average advantage for girls.

We also need to be aware that group differences shouldn't always be taken at face value. Some of the differences often reported by the media actually are somewhat more complex when examined more critically. For example, let's consider the achievement gap between Hispanic and European American students in the United States. Whereas European American students, overall, tend to achieve at higher levels in both math and reading than do Hispanic students, there actually is much variation in the achievement gap across U.S. states. For example, achievement gaps are lower than the national average in some states (e.g., Florida, Georgia, and Kentucky), and larger than the national average gap in other states (e.g., California, Connecticut, and Rhode Island) (Hemphill, Vanneman, & Rhaman, 2011).

Keep in mind that there are many forms of diversity, not just the ones covered in this chapter. Throughout our careers, we will encounter many types of diversity in our classrooms. We need to be aware of these possibilities, and use the presence of uniquely diverse students as an opportunity for learning, respect, and appreciation of diversity for all students. Examples could include students whose parents are of the same gender, students who have been adopted either domestically or internationally, students who are HIV or hepatitis positive, or students who have a particularly unique cultural background (e.g., a student who has recently moved here from Iceland).

 Remember that despite average group differences, there is considerable variability within any group as well as considerable overlap between any two groups, and differences in the schools where we teach may not reflect national averages.



If we are to maximize the learning and development of all of our students, we must be aware of group differences that may influence their classroom performance. Our challenge is to keep these differences in mind *without* either (1) imposing our own culturally based assumptions on what behaviors are “right” and “wrong” or (2) assuming that all members of a particular group fit typical group patterns. Our erroneous preconceptions about how various students will perform may actually *increase* differences among those students (de Boer, Bosker, & van der Werf, 2010; Rubie-Davies, Hattie, & Hamilton, 2006; Sirin & Ryce, 2010; van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010).

Chapter 11 describes and explains potential effects of teachers’ expectations on students’ achievement.

## Cultural and Ethnic Differences

The concept of **culture** encompasses the behaviors and belief systems that characterize a long-standing social group. Our cultures affect virtually every aspect of our lives. The culture in which we live influences the perspectives and values we acquire, the skills we find important and master, and the adult roles to which we aspire. It also guides the development of our language and communication skills, our expression and regulation of emotions, and our formation of a sense of self. Sometimes we use the word *culture* to refer to behaviors and beliefs that are widely shared over a large geographic area. For example, *mainstream Western culture* encompasses behaviors, beliefs, and values shared by many people in North America and western Europe. Members of this culture generally value self-reliance, academic achievement, democratic decision making, and respect for other individuals’ rights and possessions, among other things. However, any single country in North America or western Europe—in fact, almost every country on the planet—encompasses considerable cultural diversity within its borders. Some of this within-country diversity is the result of growing up in particular geographic regions, religious groups, or socioeconomic circumstances (A. B. Cohen, 2009; Payne, 2005; Rasmussen & Lavish, 2014).

In addition, most countries include citizens from a variety of ethnic groups. In general, an **ethnic group** is a group of individuals with a common culture and the following characteristics:

- Its roots either precede the creation of or are external to the country in which it resides. It may be comprised of people of the same race, national origin, or religious background.
- Its members share a sense of interdependence—a sense that their lives are intertwined. (NCSS Task Force on Ethnic Studies Curriculum Guidelines, 1992)

Ethnic groups are often confused with racial groups. Definitions and conceptualizations of race vary greatly (Spencer et al., 2012), and, as teachers, we need to be aware that many students and parents will have diverse attitudes toward race. Racial groups generally are based on physical differences between groups of people; those physical differences are usually genetic in origin. Thus a student might belong to the Caucasian racial group, but the student may also belong to several ethnic groups (e.g., the student might identify as being Catholic and Italian).

Cultures aren’t static entities. Instead, they continue to change over time as people incorporate new ideas, innovations, and ways of thinking, and as they interact with other cultures (Kitayama, Duffy, & Uchida, 2007; O. Lee, 1999; Rogoff, 2003). Furthermore, there’s considerable variation in attitudes and behaviors within a particular culture; individual members may adopt some cultural values and practices but reject others (Goodnow, 2010; Markus & Hamedani, 2007). For example, you might encounter a student who comes from a culture that prohibits eating certain foods and does not afford equal rights to males and females. You may notice, however, that your student accepts cultural norms for diet but also rejects the notion of gender inequality.

When people come into contact with a culture very different from their own (e.g., through immigration to a new country), many of them—especially children—gradually undergo **acculturation**, adopting some of the new culture’s values and customs. Some acculturation is critical for success in the new cultural environment, but *rapid* acculturation can be detrimental to children’s



social and emotional well-being. In most instances, children’s own cultural groups give them a support network and stable set of values that enable them to do well in school and maintain their self-esteem in the face of discrimination and other challenges (Deyhle, 2008; Matute-Bianchi, 2008; Sam & Berry, 2010).

In general, we can get the best sense of students’ cultural backgrounds and ethnic-group memberships by learning the extent to which they have participated and continue to participate in various cultural and ethnic-group activities (Gutiérrez & Rogoff, 2003). For example, some Mexican American students live in small, close-knit communities where Spanish is spoken and traditional Mexican practices and beliefs permeate everyday life, but others live in more culturally heterogeneous communities in which Mexican traditions may be cast aside to make time for mainstream American activities. And in some instances students may participate actively in two or more cultures, perhaps because they have emigrated from one country to another or perhaps because their parents come from distinctly different ethnic or racial backgrounds (Herman, 2004; A. M. Lopez, 2003; Mohan, 2009). In general, *membership in a particular cultural or ethnic group is a more-or-less phenomenon rather than an either-or situation*. In this age of increasing cross-cultural interaction, many students cannot easily be pigeonholed.



Keep in mind that some students may have multiple cultural affiliations.

## NAVIGATING DIFFERENT CULTURES AT HOME AND AT SCHOOL

When they first begin school, many children experience some *culture shock*—confusion about the behaviors expected of them in this new setting. Culture shock is more intense for some students than for others. Most schools in North America and western Europe embrace the norms and values of mainstream Western culture, and so students with this cultural background often adjust quickly to classroom practices. In contrast, students who come from cultural groups with radically different norms and values may experience a **cultural mismatch** between home and school. In particular, they may find school an unsettling place in which they don’t know what to expect from others or what behaviors other people expect of *them*. Significant differences between home and school cultures can interfere with students’ adjustment to the school setting and ultimately with their academic achievement as well (Phelan, Yu, & Davidson, 1994; Turner, 2015; Tyler et al., 2008; Ward, Bochner, & Furnham, 2001).

Cultural mismatch is compounded when teachers misinterpret the behaviors of students from cultural and ethnic minority groups. The following exercise provides an example.

### EXPERIENCING FIRSTHAND

#### ARGUMENT

Imagine that, as a new teacher, you’re approaching the school building on the first day of school. You see seven or eight boys standing in a cluster just outside the front door. Two of them are engaged in a heated argument, and the others are watching and listening with apparent delight. Here are just a few of the many insults you hear being hurled back and forth:

“Your momma so fat her driver’s license says, ‘Picture continued on other side!’”

“Yeah? Well, your momma so fat she got to iron her pants on the driveway!”

“That ain’t nothin’. Your momma so fat her cereal bowl comes with a lifeguard!”

“Hey, man, your momma so fat she got smaller fat women orbitin’ around her!”

The argument seems to be escalating, with the insults about the two boys’ mothers becoming more and more outrageous. Should you intervene?

The incident you’ve just witnessed is probably an example of “sounding” or “playing the dozens,” a friendly exchange of insults common among male youth in some African American communities. Some boys engage in such exchanges to achieve status among their peers—those who concoct the biggest, most creative insults are the winners—whereas others do it simply for amusement. But people unfamiliar with African American culture might misinterpret them as being potentially serious and worrisome (Adger, Wolfram, & Christian, 2007; R. E. Reynolds, Taylor, Steffensen, Shirey, & Anderson, 1982; Smitherman, 1998).



As students gain experience with the culture of their school, they become increasingly aware of their teachers' and peers' expectations for behavior and ways of thinking, and many eventually become adept at switching their cultural vantage point as they move from home to school and back again (Y. Hong, Morris, Chiu, & Benet-Martínez, 2000; LaFromboise, Coleman, & Gerton, 1993; Matute-Bianchi, 2008). One Mexican American student's recollection provides an example:

At home with my parents and grandparents the only acceptable language was Spanish; actually that's all they really understood. Everything was really Mexican, but at the same time they wanted me to speak good English. . . . But at school, I felt really different because everyone was American, including me. Then I would go home in the afternoon and be Mexican again. (Padilla, 1994, p. 30)

Not all students make an easy adjustment, however. Some students actively resist adapting to the school culture, perhaps because they view it as conflicting with their own cultural background and identity (Cross, Strauss, & Fhagen-Smith, 1999; Gay, 2010; Irving & Hudley, 2008; Phelan et al., 1994). Still others try desperately to fit in at school yet find the inconsistencies between home and school difficult to resolve, as illustrated by this report from a teacher whose students included immigrant Muslim children from Pakistan and Afghanistan:

During the days of preparation for Ramadan Feast, the children fasted with the adults. . . . They had breakfast [before dawn] and then went back to sleep until it was time to get themselves ready for school. In school they refrained from food or drink—even a drop of water—until sunset. By noon, especially on warm days, they were a bit listless. . . . They spoke about their obligation to pray five times daily. In their writing they expressed the conflict within:

*I always think about my country. I think about going there one day, seeing it and practicing my religion with no problems. . . . Before sunrise, I can pray with my family. But at school we can't say to my teacher, "Please, teacher, I need to pray." (Igoa, 1995, p. 135)*

As teachers, we must learn as much as we can about the ways in which students from various cultural and ethnic groups are apt to be different from one another and from ourselves. Equipped with such knowledge, we can make reasonable accommodations to help students from all backgrounds adjust to and thrive in our classrooms.

## EXAMPLES OF CULTURAL AND ETHNIC DIVERSITY

Tremendous cultural variation exists within African American, Hispanic, Asian American, Native American, European American, and numerous other groups. Thus, we must be careful not to form stereotypes about *any* group. At the same time, knowledge of frequently observed cultural differences, such as those described in the following sections, can sometimes help us better understand why students behave as they do.

### LANGUAGE AND DIALECT

One obvious cultural difference is language. Although most students speak English at school, our students may experience different language environments outside of school. In the United States, 21.8% of children between the ages of 5 through 14 speak a language other than English at home (U.S. Census Bureau, 2013). There can also be much variation within individual students' homes regarding how much English or another language is used (Branum-Martin, Mehta, Carlson, Francis, & Goldenberg, 2014). Whereas the entire family may speak another language almost all of the time in some homes, in other homes, one parent may speak English much of the time. But even if children speak English at home, they may use a form of English different from the **Standard English** typically used at school. More specifically, they may speak in a different **dialect**, a form of a particular language that includes some unique pronunciations, idioms, and grammatical structures. Dialects tend to be associated either with particular geographical regions or with particular ethnic and cultural groups.

Perhaps the most widely studied ethnic dialect is **African American English** (you may also see the terms *Black English Vernacular* and *Ebonics*). This dialect—which is illustrated in the earlier "Argument" exercise and is actually a group of dialects that vary somewhat from place to place

—is characterized by certain ways of speaking that are distinctly different from those of Standard English (e.g., “He got ten dollar,” “Momma she mad,” “He be talkin’”) (Hulit & Howard, 2006, p. 346; Owens, 1995, p. A-8). At one time, many researchers believed that an African American dialect represented a less complex form of speech than Standard English and thus urged educators to teach students to speak “properly” as quickly as possible. But most researchers now realize that African American dialects are, in fact, very complex languages with predictable sentence structures and that these dialects promote communication and sophisticated thinking processes as readily as Standard English (Alim & Baugh, 2007; Fairchild & Edwards-Evans, 1990; Hulit & Howard, 2006; Spears, 2007).

Many children and adolescents view their native dialect as an integral part of their ethnic identity. Furthermore, when a particular dialect is the language preferred by local community members, it’s often the means through which people can most effectively connect with one another in face-to-face interactions and text messaging (Godley & Escher, 2011; Ogbu, 2003; D. Paris & Kirkland, 2011).

Nevertheless, lack of proficiency in Standard English can impede children’s reading and writing development, and in later years, their use of a distinct regional or cultural dialect may lead other people to underestimate or discredit their abilities. For such reasons, many experts recommend that all students in English-speaking countries develop proficiency in Standard English. Ultimately, children and adolescents function most effectively when they can use both their local dialect and Standard English in appropriate settings. For example, although we may wish to encourage Standard English in most written work or in formal oral presentations, we might find other dialects quite appropriate in creative writing or informal classroom discussions (Adger et al., 2007; DeBose, 2007; Ogbu, 1999, 2003; Smitherman, 1994). In general, being aware of and accommodating students’ cultural differences in language use can enhance our ability to educate students from diverse linguistic backgrounds (Bailey, Osipova, & Reynolds-Kelly, 2015).



Encourage students to use both Standard English and their local dialect, each in appropriate settings.

### TALKATIVENESS AND VERBAL ASSERTIVENESS

Relatively speaking, mainstream Western culture is a chatty one. People often say things to one another even when they have little to communicate, making small talk a way of maintaining interpersonal relationships (Gay, 2010; Trawick-Smith, 2003). In some African American communities as well, people talk a lot, often with a great deal of energy and enthusiasm (Gay, 2006; Tyler et al., 2008). In certain other cultures, however, silence is golden (Norenzayan, Choi, & Peng, 2007; Trawick-Smith, 2003). For example, many people from Southeast Asian countries believe that effective learning is best accomplished through attentive listening rather than through speaking (J. Li, 2005; J. Li & Fischer, 2004; Volet, 1999).

Some talkative cultures are also assertive ones, in that people readily voice their opinions, perhaps interrupting those who are speaking; for example, this is the case for many African Americans, European Americans, and Hawaiians. People from quieter cultures, such as many Asian Americans, tend to be more subtle and tentative in expressing their opinions—for instance, they might begin a sentence by saying “I’m not sure, but perhaps . . .”—and they aren’t as likely to reveal their emotions during conversations (Gay, 2010; Morelli & Rothbaum, 2007; Tyler et al., 2008; Ward et al., 2001).

In addition, different cultural and ethnic groups have diverse views about how assertive children should be with adults. In mainstream Western culture a common expectation is that children will speak up whenever they have comments or questions. Yet in many parts of the world, children are expected to learn primarily by close, quiet observation of adults, rather than by asking questions or otherwise interrupting what adults are doing (Correa-Chávez, Rogoff, & Mejía Arauz, 2005; Gutiérrez & Rogoff, 2003; Kağıtçıbaşı, 2007). And in some cultures—for instance, in many Mexican American and Southeast Asian communities and in some African American communities—children learn very early that they should engage in conversation with adults only when their participation has been directly solicited (Delgado-Gaitan, 1994; C. A. Grant & Gomez, 2001; Ochs, 1982).

As teachers, we need to be sensitive to such differences in talkativeness, particularly when students have recently arrived from another country. A student who has recently moved from a culture where children and adolescents are socialized to be quiet in classrooms may find the linguistic environments in Western classrooms disruptive and disrespectful. Parents of such students

Chapter 11 looks more closely at cultural differences in emotional expressiveness.

may be particularly concerned that their children will be ignored and not receive sufficient attention from teachers (Mizuochi & Dolan, 1994).

### EYE CONTACT

For many of us, looking someone in the eye is a way to show that we're trying to communicate or are listening intently to what the person is saying. But in many Native American, African American, Mexican American, Puerto Rican, and Polynesian communities, a child who looks an adult in the eye is showing disrespect. In these communities children are taught to look down in the presence of adults (Jiang, 2010; McCarthy, Lee, Itakura, & Muir, 2006; Tyler et al., 2008).

The following anecdote shows how a teacher's recognition of children's beliefs about eye contact can make a difference:

A teacher [described a Native American] student who would never say a word, nor even answer when she greeted him. Then one day when he came in she looked in the other direction and said, "Hello, Jimmy." He answered enthusiastically, "Why hello Miss Jacobs." She found that he would always talk if she looked at a book or at the wall, but when she looked at him, he appeared frightened. (Gilliland, 1988, p. 26)

### PERSONAL SPACE

In some cultures, such as those of some African American and Hispanic communities, people stand close together when they talk, and they may touch one another frequently. In contrast, European Americans and East Asians tend to keep a fair distance from one another, maintaining some **personal space**, especially if they don't know each other very well (Slonim, 1991; Trawick-Smith, 2003; Ward et al., 2001). As teachers, we must be sensitive to the personal space that students from various cultural backgrounds need in order to feel comfortable in interactions with us and with classmates.

### RESPONDING TO QUESTIONS


A common interaction pattern in many Western classrooms is the **IRE cycle**: A teacher *initiates* an interaction by asking a question, a student *responds* to the question, and the teacher *evaluates* the response (Mehan, 1979). Similar interactions are often found in parent-child interactions in middle-income European American homes. For instance, when our own children were toddlers and preschoolers, the authors often asked them questions such as "How old are you?" and "What does a cow say?" and praised them when they answered correctly. But children reared in other cultural groups aren't necessarily familiar with such question-and-answer sessions when they first come to school. Furthermore, some children may be quite puzzled when a teacher asks questions to which he or she already knows the answer (Adger et al., 2007; Crago, Annahatak, & Ningiuruvik, 1993; Heath, 1989; Rogoff, 2003, 2007). And children in some communities are specifically taught *not* to answer questions from strangers about personal and home life—questions such as "What's your name?" and "Where do you live?" (Heath, 1982, 1989).

The issue, then, isn't that children are unaccustomed to questions; rather, it's that they have little experience with certain *kinds* of questions, as one child's mother explains:

Miss Davis, she complain 'bout Ned not answerin' back. He says she asks dumb questions she already know about. (Heath, 1982, p. 107)

Meanwhile, teachers may misinterpret the children's silence, as this teacher does:

The simplest questions are the ones they can't answer in the classroom; yet on the playground, they can explain a rule for a ballgame or describe a particular kind of bait with no problem. Therefore, I know they can't be as dumb as they seem in my class. (Heath, 1983, p. 269)

 Keep in mind that some students have been taught that initiating a conversation with an adult is disrespectful.



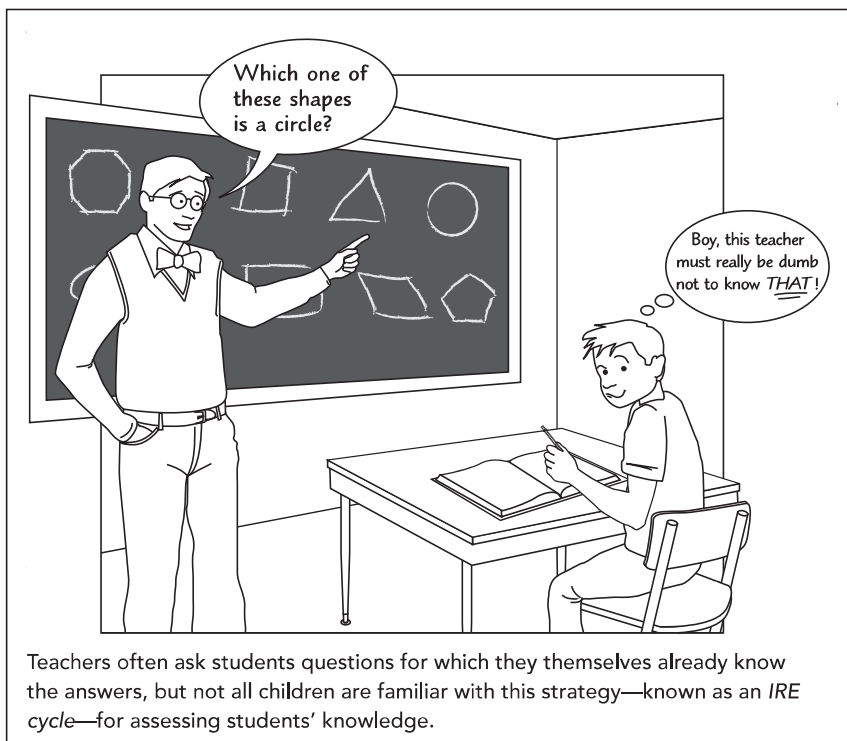
 Don't rely on eye contact as the only indicator that students are paying attention.




Photo Researchers, Inc.


In some cultures, including many Native American communities, children are taught to look down as a sign of respect for an adult who speaks to them.

 Be aware that some children are unaccustomed to answering certain kinds of questions.



 Increase wait time as a means of encouraging students from diverse backgrounds to participate in discussions.

Increasing teacher wait time also enhances thinking and learning, as you'll discover in Chapter 6.

 Remember that some students feel more comfortable practicing new skills in private.

### PUBLIC VERSUS PRIVATE PERFORMANCE

In many classrooms learning is a very public enterprise. Individual students are often expected to answer questions or demonstrate skills in full view of their classmates, and they're encouraged to ask questions themselves when they don't understand. Such practices, which many teachers take for granted, may confuse or even alienate the students of some ethnic groups (Eriks-Brophy & Crago, 1994; García, 1994; Lomawaima, 1995). For example, many Native American children are accustomed to practicing a skill privately at first, performing in front of a group only after they've attained a reasonable level of mastery (Castagno & Brayboy, 2008; Suina & Smolkin, 1994). And children in some Native American and Hawaiian communities may feel more comfortable responding to questions as a group rather than interacting with adults one on one (K. H. Au, 1980; L. S. Miller, 1995).

### VIEWS ABOUT TEASING

Although people in some cultures think of teasing as mean spirited, it's a common form of social interaction in certain other cultures. For example, in the earlier "Argument" exercise, two African American boys engaged in playful one-upmanship, flinging increasingly outlandish insults at each other. And in the opening case study, Jack's mother teased him by suggesting that "Now maybe school will look easy!" When taken in the right spirit, teasing serves a variety of functions for particular cultural groups—perhaps providing a source of amusement and an outlet for verbal creativity, exerting gentle pressure to engage in more productive behavior, or helping children learn how to take criticism in stride (Adger et al., 2007; P. M. Cole, Tamang, & Shrestha, 2006; Rogoff, 2003). As teachers, we need to pay particular attention to instances when students from different cultural backgrounds tease one another. Whereas it may be acceptable for students from within a specific cultural group to tease each other, boundaries may be crossed when students from outside of that cultural group engage in the teasing.

### COOPERATION VERSUS COMPETITION

In a traditional Western classroom, students are rewarded when, as individuals, they achieve at high levels. In some cases—for example, when teachers grade on a curve or post "best" papers on a bulletin board—students must actually compete with one another in order to be successful.

Cultural differences have also been observed in how long people wait before answering another person's question. People from some cultures use lengthy pauses before responding as a way of indicating respect, as this statement by a Northern Cheyenne individual illustrates:

Even if I had a quick answer to your question, I would never answer immediately. That would be saying that your question was not worth thinking about. (Gilliland, 1988, p. 27)

When teachers expect immediate answers to their questions—with a delay of, say, a second or less—students from these cultures may not have the time they need to show respect as they respond. Be wary of interpreting such delays as lack of ability or engagement. Such students are more likely to participate in class and answer questions when their teachers provide a more extended **wait time**—that is, when several seconds of silence can elapse after the teacher's question or another student's comment (Castagno & Brayboy, 2008; Mohatt & Erickson, 1981; Tharp, 1989).

Yet in some cultures—including many Native American, Mexican American, African, Southeast Asian, and Pacific Island communities—*group* achievement is valued over individual success. Students from these cultures are often more accustomed to working cooperatively and for the benefit of the community, rather than for themselves, and value humility about their personal accomplishments (X. Chen, Chung, & Hsiao, 2009; Lomawaima, 1995; Mejía-Arauz, Rogoff, Dexter, & Najafi, 2007; Tyler et al., 2008). Such a cooperative spirit is epitomized by the Zulu word *ubuntu*, which reflects the belief that people become fully human largely through caring relationships with others and regular contributions to the common good.

Students from cooperative cultures may resist when asked to compete against their classmates, as 16-year-old Maria explains:

I love sports, but not competitive sports. [My brother is] the same way. I think we learned that from our folks. They both try to set things up so that everyone wins in our family and no one is competing for anything. (Pipher, 1994, p. 280)

Students may also be confused when teachers reprimand them for helping one another on assignments or for sharing answers, and they may feel uncomfortable when their individual achievements are publicly acknowledged. Group work, with an emphasis on cooperation rather than competition, often facilitates the school achievement of these students (Deyhle & Margonis, 1995; Lipka, 1998; L. S. Miller, 1995; Rogoff, 2003).

### FAMILY RELATIONSHIPS AND EXPECTATIONS

In many groups—for example, in many Hispanic, Native American, Arab American, Polynesian, and Asian groups, as well as in some rural European American communities—family bonds and relationships are especially important, and extended family members often live nearby. Students growing up in these cultures are likely to feel responsibility for their family's well-being, to have a strong sense of loyalty to other family members, and to go to great lengths to please their elders. It isn't unusual for students in such communities to leave school when their help is needed at home, as Jack does in the opening case study (Banks & Banks, 1995; Fuligni, 1998; Kağitçibaşı, 2007; McIntyre, 2010).

In most cultures school achievement is highly valued, and parents encourage their children to do well in school (Monzó, 2010; R. R. Pearce, 2006; Spera, 2005). But some cultural groups place even higher priority on other accomplishments. For example, when preparing young children for school, many Hispanic families place particular emphasis on instilling appropriate social behaviors—for instance, showing respect for adults and cooperating with peers (Greenfield et al., 2006; Tyler et al., 2008). And in some cultural groups, an early pregnancy is a cause for joy even if the mother-to-be is young or hasn't yet completed high school (Deyhle & Margonis, 1995; McMichael, 2013; Stack & Burton, 1993).

We must certainly be sensitive to situations in which the achievements that *we* think are important are seemingly not valued by students' families. Whenever possible, we must show our students how the school curriculum and classroom activities relate to their cultural environment and their own life goals (Brayboy & Searle, 2007; Lipman, 1995; Moje & Hinchman, 2004). We must also maintain open lines of communication with students' parents. Because some parents of minority-group children feel intimidated by school personnel, teachers often need to take the first step in establishing productive parent–teacher relationships. When teachers and parents realize that both groups want students to succeed in the classroom, they're more apt to work cooperatively to promote student achievement (Anderman & Anderman, 2014; Edwards & Turner, 2010; Reschly & Christenson, 2009).

### CONCEPTIONS OF TIME

Many people regulate their lives by the clock: Being on time to appointments, social engagements, and the dinner table is important. This emphasis on punctuality isn't characteristic of all cultures, however. For example, many Hispanic and Native American groups don't observe strict schedules and timelines (Tyler et al., 2008; Ward et al., 2001). Not surprisingly, children from these communities may sometimes be late for school and may have trouble understanding the need to complete school tasks within a certain time frame.



Make frequent use of cooperative activities, especially when students' cultures place high value on cooperation.




Relate the school curriculum to students' home environments and cultures. Establish and maintain open lines of communication with parents, and work with them to identify ways in which home and school can collaborate in helping students be successful at school.

Chapter 13 identifies many strategies for working effectively with parents.

In most Western cultures, we tend to emphasize thinking about future time—what we will do tomorrow, our plans for next summer, or our goals for the next 10 years. Nevertheless, not all cultures emphasize future time; we need to be aware that some of our students may be less focused on the future than are others. For example, results of studies of individuals who speak Arabic indicate that an orientation toward the past is more prominent than an orientation toward the future (de la Fuente, Santiago, Román, Dumitrache, & Casasanto, 2014). Thus students from some cultural or linguistic backgrounds may tend to talk about and value the past more than do other students.

To succeed in mainstream Western society, students eventually need to learn punctuality. At the same time we must recognize that not all students will be especially concerned about clock time when they first enter our classrooms. Certainly we should expect students to come to class on time and to turn in assignments when they're due. But we must be patient and understanding when, for cultural reasons, students don't develop such habits immediately.

 Encourage punctuality, but be patient if students' cultural backgrounds have placed little emphasis on clock time.

### WORLDVIEWS


The cultural and ethnic differences identified so far reveal themselves, in one way or another, in students' behaviors. Yet the definition of culture presented early in the chapter includes the behaviors *and belief systems* that characterize a social group. Our general beliefs and assumptions about the world—collectively known as our **worldview**—are often so integral to our everyday thinking that we take them for granted and aren't consciously aware of them (Koltko-Rivera, 2004; Losh, 2003). Some beliefs that permeate the curriculum in traditional Western schools aren't universally shared, however. Consider the following examples:


- After a major hurricane ripped through their community, many fourth and fifth graders attributed the hurricane to natural causes, but some children from minority-group backgrounds had heard explanations elsewhere that led them to believe that people's actions or supernatural forces also played a role in the hurricane's origins and destructiveness (O. Lee, 1999).
- Fourth graders from the Menominee culture (a Native American group) often show exceptionally high achievement scores in science, but by eighth grade their scores may decline considerably. Menominee culture encourages children to think about the many ways in which they are a *part* of nature, rather than taking care of or dominating it, and children increasingly find the school science curriculum at odds with this view (Atran, Medin, & Ross, 2005; Medin, 2005).
- When American high school students read newspaper articles about the appropriateness or inappropriateness of prayer in public schools, some view the trend away from prayer as a sign of progress toward greater religious freedom. But others—those from deeply religious Christian families, for instance—view the same trend as a decline that reflects abandonment of the country's religious heritage (Mosborg, 2002).

As you can see, then, students' worldviews are likely to influence their interpretations of current events and classroom subject matter (Kağıtçıbaşı, 2007; Keil & Newman, 2008).

## CREATING A CULTURALLY INCLUSIVE CLASSROOM ENVIRONMENT


Clearly, we must be aware of and responsive to the different ways in which students of various cultural and ethnic groups are likely to think and act. It's equally important that we help our *students* develop such awareness and responsiveness, enabling them to become productive members both of the school community and of our increasingly multicultural society. Following are several suggestions.


-  *Come to grips with your own cultural lens and biases.* In the opening case study Jack's English teacher complained that "his parents don't care" and that, in general, the parents of Navajo students "just don't support their [children's] education" (Deyhle & LeCompte, 1999, p. 127). This teacher was looking at parents' behaviors from the perspective of a non-Navajo. The assumptions and worldviews we've acquired in our own culture—for instance, the assumption that good parents actively direct and control their children's behaviors—are often

 Consider how students' diverse worldviews might influence their interpretations of classroom subject matter.


so pervasive in our lives that we tend to treat them as common sense, or even as facts, rather than as the beliefs they really are. These beliefs become a *cultural lens* through which we view events—a lens that may lead us to perceive other cultures' practices as somehow irrational and inferior to our own.

Teachers who work effectively with students from diverse backgrounds are keenly aware that their own cultural beliefs are just that—beliefs. And they make a concerted effort *not* to pass judgment on cultural practices and beliefs very different from their own, but rather to try to understand *why* people of other cultural groups think and act as they do (Banks et al., 2005; Rogoff, 2003).

 *Educate yourself about your students' cultural backgrounds.* One way to do this, of course, is to read as much as possible about various cultural groups. But in addition, effective teachers immerse themselves in students' daily lives and cultures—talking with students about their outside interests and activities, getting to know students' families, patronizing local businesses, and so on (Castagno & Brayboy, 2008; Ladson-Billings, 1995a; Moje & Hinchman, 2004). We can also benefit from observing other teachers who have been successful at working with culturally diverse students (Hilliard, 1995). Only when we immerse ourselves in a very different cultural environment can we truly begin to understand how we, too, are products of our own cultures and to appreciate the potential benefits of growing up in a very different one (Banks et al., 2005; Rogoff, 2003).

 *Be sensitive to the culture shock that recent immigrants may be experiencing.* In recent years, immigration has become a highly politicized topic in the United States and elsewhere. Whatever our own political views might be on the topic, we must realize that *all* students deserve our guidance and support in their efforts to acquire the knowledge and skills they will need to be successful in the adult world. Recent immigrant students may lack some of the skills and knowledge that non-immigrant students have acquired, and this can adversely affect their achievement (Martin, Liem, Mok, & Xu, 2012). Furthermore, media coverage about other parts of the world may make transitions more difficult for some immigrants than others. For example, when tensions are high between Western nations and countries in the Middle East, students who have immigrated from those countries may face particular challenges at school, such as being teased or ostracized by other students (Kumar, Warnke, & Karabenick, 2014).

For recent immigrants, guidance and support from teachers might include not only extra academic assistance, but also explicit instruction in the typical practices and customs—“how things are done”—of their new culture (Vang, 2010; Ward et al., 2001). Also, some students may require accommodations for their religious beliefs; for instance, we might discreetly give devout Muslim students a private place for their early afternoon prayer, and we might excuse them from vigorous physical exercise when they're fasting during Ramadan (Sirin & Ryce, 2010). In particular, immigrant students might need accommodations when taking certain tests; some recent research suggests that immigrant students especially might benefit from being allowed to take assessments using computer-based platforms, provided that the assessments are administered fairly and equitably to all students (Sonnleitner, Brunner, Keller, & Martin 2014).

 *Incorporate the perspectives and traditions of many cultures into the curriculum.* True **multicultural education** isn't limited to cooking ethnic foods, celebrating Cinco de Mayo, or studying famous African Americans during Black History Month. Rather, it integrates throughout the curriculum the perspectives and experiences of numerous cultural groups and gives all students reason for pride in their own cultural heritage. Students from diverse backgrounds are more likely to be motivated to do well in school—and to *actually* do well there—when they perceive the school curriculum and classroom activities to be relevant to their own cultures (Brayboy & Searle, 2007; Gay, 2010; Moje & Hinchman, 2004; Tyler et al., 2008). A primary school teacher who often has a majority of non-English-speaking children in her class at the beginning of each school year has described how she incorporates the students' diverse cultural backgrounds into her teaching: “We try to include all cultural celebrations throughout the year—Eid, Diwali, Chinese new year and so on. The lovely thing about teaching this age is children are still very naive to differences in nationality and religion and so are very accepting to all” (Eustice, 2012, paragraph 24).

Chapter 14 discusses strategies for assessing student learning.

It is important to recognize that exposure to novel cultures is beneficial to majority students as well. For example, kindergartners and first graders who share classrooms with children who are nonnative speakers of English (and who are learning to speak English) tend to have lower levels of behavioral problems and better social skills than children with fewer English language learners in their classrooms (Gottfried, 2014).

As teachers we can incorporate content from diverse cultures into many aspects of the school curriculum. Following are examples:

- In language arts, study the work of authors and poets from a variety of ethnic groups (e.g., study the lyrics of popular hip-hop songs).
- In math and science, draw on students' experiences with their community's building, hunting, farming, and cooking practices.
- In social studies, look at different religious beliefs and their effects on people's behaviors (e.g., see Figure 4.2).
- In history, look at wars and other major events from diverse perspectives (e.g., the Native American perspective on European settlers' westward migration, the Spanish perspective on the Spanish–American War, the Japanese perspective on World War II).
- In music, explore tonal and rhythmic differences in music from different world regions.
- In both history and current events, consider such issues as discrimination and oppression. (J. M. Hughes, Bigler, & Levy, 2007; J. Kim, 2011; Lipka, Yanez, Andrew-Ihrke, & Adam, 2009; McIntyre, 2010; NCSS Task Force on Ethnic Studies Curriculum Guidelines, 1992; K. Schultz, Buck, & Niesz, 2000)

In our exploration of diverse cultures, we should look for commonalities as well as differences. For example, in the elementary grades we might study how people in various countries celebrate children's birthdays. In the secondary grades it can be beneficial to explore issues that adolescents of all cultures face: gaining the respect of elders, forming trusting relationships with peers, and finding a meaningful place in society. One important goal of multicultural education should be to communicate that, underneath it all, people are more alike than different (Brophy, Alleman, & Knighton, 2009; Ulichny, 1996).



MyEdLab

#### Video Example 4.1.

Teachers work effectively with culturally diverse students by becoming aware of their cultural backgrounds and creating culturally inclusive classroom environments.



Look for commonalities as well as differences among people from different cultural backgrounds.

**FIGURE 4.2** In this paper for her language arts and social studies classes, 13-year-old Melinda explains what she has learned about Japan's Shinto religion and how in some ways it relates to her own life.


Shinto gods are called Kami. It is believed that these spirits are found in the basic forces of fire, wind, and water. Most influence agriculture and this of course was how the earliest people survived. They relied on what they grew to live. So the gods had to help them grow their crops or they died. It seems natural for people to worship things that will help them survive, and worshiping forces that affect what you grow was the common practice in early history. These basic forces even affect the survival of modern people. We all still need agriculture to live and forces of nature really determine whether crops grow or not.

Shintoists never developed strong doctrines, such as the belief in life after death that many other religions have. However they have developed some moral standards such as devotion, sincerity, and purity. . . .


All Shintoists have a very good and simple set of rules or practice. They want to be honorable, have feelings for others, support the government, and keep their families safe and healthy. I think these are good principles for all people, whether they practice a religion or not. . . .



Students should be encouraged to contribute to the multicultural curriculum—for example, by bringing in photographs and favorite foods from home and by expressing their varying experiences and perspectives without fear of ridicule or censure (Gollnick & Chinn, 2009; Jiang, 2010). Ultimately, we should help students realize that diverse cultural groups have much to learn from one another. As an example, students might be surprised to discover that several practices underlying many democratic governments—such as sending delegates to represent particular groups, allowing only one person in a governing council to speak at a time, and keeping government and military bodies separate—were adopted from Native American practices in the 1700s (Rogoff, 2003; Weatherford, 1988).

 *Build on students' strengths, and adapt instructional methods to their preferred ways of learning and behaving.* Classroom strategies that build on students' existing knowledge, skills, and accustomed ways of learning and behaving are collectively known as **culturally responsive teaching**. For example, if students regularly collaborate with others at home and in the community, we should make frequent use of cooperative group activities (Castagno & Brayboy, 2008; Hurley, Allen, & Boykin, 2009; Ladson-Billings, 1995a). If, in their informal interactions with peers, students are accustomed to talking simultaneously and elaborating on one another's ideas, we might ask them to answer questions in chorus rather than as individuals (K. H. Au, 1980). And if students' home environments are high-energy ones in which several activities often take place simultaneously—as is sometimes true in African American and Hispanic families—we might create a similarly high-energy, multi-activity classroom environment (Tyler et al., 2008).

Educators also need to remember that students' cultural backgrounds influence their behaviors and beliefs. When teachers lose sight of the strong influence of culture on students, they often underestimate students' intellectual potential, academic achievement, and language abilities (Hilliard, 1992; Tyler, Boykin, & Walton, 2006). For example, some African American students may harbor doubts about the economic value of education (Mickelson, 1990). An awareness of the fact that some students feel this way can help teachers to potentially understand why a student might become disengaged from academics.

 *Work hard to break down students' stereotypes of particular ethnic groups.* Although we and our students should certainly be aware of real differences among various ethnic groups, it's counterproductive to hold a **stereotype**—a rigid, simplistic, and inevitably inaccurate caricature—of any particular group. Even the most open-minded of us are sometimes prone to holding ethnic stereotypes, as you might discover in the following exercise.

## EXPERIENCING FIRSTHAND

### PICTURE THIS #1

Form a picture in your mind of someone from each of the following three places. Make note of the *first* image that comes to mind in each case:

- The Netherlands (Holland)
- Mexico
- Hawaii

Now answer yes or no to each of these questions:

- Was the person from the Netherlands wearing wooden shoes?
- Was the person from Mexico wearing a sombrero?
- Was the person from Hawaii wearing a hula skirt or flower lei?

If you answered *yes* to any of the three questions, then one or more of your images reflected an ethnic stereotype. Most people in the Netherlands, Mexico, and Hawaii *don't* routinely wear such stereotypical attire.

In the preceding exercise, your stereotypes involved only superficial qualities. Yet people's stereotypes can also include notions about typical personality characteristics and behaviors. Some stereotypes—for instance, perceptions of a certain group as being “stupid,” “lazy,” or “aggressive”—are derogatory and certainly *not* conducive to productive cross-group interactions.




Stress that people from diverse cultures can all benefit from considering one another's perspectives.


Chapter 11 discusses how beliefs about the value of education in general, and of specific subject areas, affect students' motivation.

Researchers have identified several possible origins of counterproductive stereotypes. In some instances family members, friends, or popular media communicate stereotypes through prejudicial remarks, practices, avoiding eye contact, and caricatures (Branch, 1999; Castelli, De Dea, & Nesdale, 2008; Nesdale, Maass, Durkin, & Griffiths, 2005; Theobald & Herley, 2009). In other cases a history of conflict and animosity between two groups may lead children to conclude that people in the opposing group have undesirable qualities (Pitner, Astor, Benbenishty, Haj-Yahia, & Zeira, 2003). Occasionally stereotypes appear in curriculum materials and classroom instruction—as happens, for instance, when American children role-play the first Thanksgiving by dressing up in paper-bag “animal skins,” painting their faces, and wearing feathers on their heads (Bigler & Liben, 2007; Brayboy & Searle, 2007). And sometimes students simply have little or no knowledge about a cultural group very different from their own. For example, when a Muslim girl wears a head scarf to school, a thoughtless classmate might ask, “Are you bald? Is there something wrong with your hair?” (McBrien, 2005a, p. 86; Sirin & Ryce, 2010).

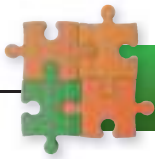
At a minimum, unflattering stereotypes lead to misunderstandings among members of diverse cultural groups. When left uncorrected, they can also lead to overtly discriminatory and malicious behaviors—ethnic jokes, racial taunts, social exclusion, and so on (Killen, 2007; Pfeifer, Brown, & Juvonen, 2007). We also need to think about the stereotypes that we as teachers may hold, and consider how those stereotypes might affect our interactions with our students. For example, some teachers provide feedback differentially to minority students, giving less criticism and more praise to minority students than to majority students (Harber et al., 2012). Although this might be well intentioned, we need to be aware that we may be sending different messages to our students when we vary feedback. Students who are frequent victims of others’ misunderstandings and prejudice are more likely than their peers to become chronically ill or depressed (Allison, 1998; G. H. Brody et al., 2006; Tatum, 1997). Negative stereotypes can also turn inward in a phenomenon known as **stereotype threat**: Students become overly anxious in domains in which their group stereotypically does poorly and, as a result, perform more poorly than they otherwise would (J. Aronson & Steele, 2005; Walton & Spencer, 2009).

As teachers, we must work hard to correct students’ inaccurate and demeaning stereotypes of various cultural and ethnic groups, and we must vigorously address any acts of prejudice and discrimination we witness in the classroom and elsewhere. The *Into the Classroom* feature “Addressing Students’ Stereotypes and Prejudices” offers several concrete strategies. By learning to appreciate multicultural differences within a single classroom, students take an important step toward appreciating the multicultural nature of the world at large.

 *Bring cultural diversity to culturally homogeneous classrooms.* When students attend school only with peers who are culturally very similar to themselves, they may hold especially naive and potentially counterproductive stereotypes about other cultural and ethnic groups (McGlothlin & Killen, 2006; Pfeifer et al., 2007). In such situations we may have to take students beyond school boundaries, either physically or vicariously. For instance, we might engage students in community action projects that provide services to particular ethnic groups—perhaps in preschools, nursing homes, or city cultural centers (Sleeter & Grant, 1999). Alternatively, we might initiate a sister schools program in which students from two ethnically different communities regularly communicate, exchanging letters, photographs, stories, local news items, and the like (Koeppel & Mulrooney, 1992).

 *Foster democratic ideals, and empower students to bring about meaningful change.* Any multicultural education program must include such democratic ideals as human dignity, equality, justice, and appreciation of diverse viewpoints (Gay, 2010; Gollnick & Chinn, 2009; NCSS Task Force on Ethnic Studies Curriculum Guidelines, 1992). We better prepare students to function effectively in a democratic society when we help them understand that virtually every nation includes numerous cultures and that such diversity provides a richness of ideas and perspectives that will inevitably yield a more creative, productive society overall. Such understanding is reflected in the writing sample in Figure 4.3, written by a student who was attending a rural, culturally homogenous high school in New Hampshire. The student’s words were genuine; after earning his diploma, he spent 2 years in a very different cultural environment—a community in rural Brazil—before attending college.

Teaching respect for diverse perspectives doesn’t necessarily mean that we treat all beliefs as equally acceptable. For instance, we should certainly not embrace a culture that blatantly



## Into The Classroom

### Addressing Students' Stereotypes and Prejudices

- Use curriculum materials that represent all cultures and ethnic groups as competent, legitimate participants in mainstream society, rather than as exotic curiosities who live in a separate world.**  
A history teacher peruses a history textbook to make sure it portrays members of all ethnic groups in a nonstereotypical manner. He supplements the text with readings that highlight the important roles that members of various ethnic groups have played in history.
- Assign literature depicting peers from diverse cultural backgrounds.**  
As part of a research project in England, several elementary school teachers read to students a series of stories involving close friendships between English children and refugees from other countries. Following this experimental intervention, the students express more positive attitudes toward refugee children than do control-group students who have not heard the stories.
- Explore the nature and complexity of various dialects.**  
A high school language arts class examines some unique features of a local African American dialect, including various forms of the verb *to be*. For example, African American members of the class explain that the word *is* is often dropped in simple descriptive sentences (e.g., "He a handsome man") and that the word *be* is sometimes used to indicate a constant or frequently occurring characteristic (e.g., "He be talking" describes someone who talks a lot).
- Conduct class discussions about prejudice and racism that exist in the school and local community.**  
A middle school in a suburban community creates a number of mixed-race focus groups in which students regularly convene to share their views about interracial relations at the school. Although some students of European American ancestry initially feel uncomfortable talking about this topic with their minority-group peers, once the ice has been broken, greater cross-cultural understanding and communication result.
- Expose students to successful role models from various ethnic backgrounds.**  
A teacher invites several successful professionals from minority groups to speak with her class about their careers. When some students seem especially interested in one or more of these careers, she arranges for the students to spend time with the professionals in their workplaces.
- Assign small-group cooperative projects in which students from diverse backgrounds must combine their unique talents to achieve a common goal.**  
A fourth-grade teacher has small cooperative groups design and conduct schoolwide surveys soliciting other students' opinions on various topics (e.g., ideas for school fundraisers, preferences for cafeteria menu items, etc.). The teacher intentionally creates groups that are culturally heterogeneous, knowing that the group members will draw on diverse friendship networks in seeking volunteers to take the surveys. In addition, he makes sure that every member of a group has something unique to offer in survey design or data analysis—perhaps knowledge of word processing software, artistic talent, or math skills.
- Emphasize that some people affiliate with two or more cultural groups and that individual members of any single group are often very different from one another in behaviors, beliefs, and values.**  
In a geography unit on major world religions, a middle school teacher regularly points out that members of any single religion often have very different customs. "For example," he says, "some Muslim women dress in much the same way that women in this country do; others also wear head scarves in addition to regular, modern clothes; and still others dress in a burqa that covers everything except their hands. Usually the women wear a scarf or burqa to show modesty about their bodies. In fact, some Jewish women, too, wear head scarves to show that they are modest, but many others don't."

Sources: Adger et al., 2007; Barbarin, Mercado, & Jigjidsuren, 2010; Boutte & McCormick, 1992; L. Cameron, Rutland, Brown, & Douch, 2006 (refugee stories example); Dovidio & Gaertner, 1999; Gutiérrez & Rogoff, 2003; Hulit & Howard, 2006, pp. 345–346 (dialect example); Mohan, 2009; Oskamp, 2000; Pfeifer et al., 2007; K. Schultz et al., 2000 (focus groups example); Tatum, 1997.

violates some people's basic human rights. Respect does mean, however, that we and our students should try to understand another cultural group's behaviors within the context of its overall beliefs and assumptions.

Ideally, a democracy also provides a context in which students can bring about meaningful change. Students should be encouraged to challenge the status quo and strive for social justice—perhaps regarding such issues as substandard housing, poor voter turnout in certain neighborhoods, or misuse of natural resources (Ladson-Billings, 1995a; Lipman, 1995). For example, in some high schools in the Navajo Nation of the American Southwest, students have taken on controversial commercial practices (e.g., excessive tree cutting, landscape-scarring mining practices) that threaten their community's long-term well-being; they've conducted library research, interviewed community leaders, prepared written reports, and presented their findings at public meetings (Nelson-Barber & Estrin, 1995). Service learning

#### **FIGURE 4.3** In an essay for his American history class, 16-year-old Randy reveals his appreciation of cultural differences.

To me, diversity is not only a fact of life, but it is life. To be different and unique is what allows people to live a fulfilling life. To learn and admire other people's differences is perhaps one of the keys to life and without that key, there will be too many doors that will be locked, keeping you out and not allowing you to succeed. To learn that a majority of one kind in one place may be a minority of another kind in another place can help to initiate an outlook on life that promotes perspective and reason of any situation.

projects such as these seem to instill a “can-do” spirit and optimism that all citizens can have a significant impact on the quality of their own and other people’s lives (Eccles, 2007; Kahne & Sporte, 2008; Tate, 1995).

#### MyEdLab Self-Check 4.1

**MyEdLab Application Exercise 4.1.** In this interactive exercise you can practice identifying cultural and ethnic differences among students.



**MyEdLab Application Exercise 4.2.** In this interactive exercise you can practice applying what you have learned about teaching strategies that underlie culturally responsive teaching.



## Gender Differences

In their academic abilities, boys and girls are probably more similar than you think. But in other respects they may be more different than you realize.

### RESEARCH FINDINGS REGARDING GENDER DIFFERENCES

Researchers have identified a number of gender differences in the physical, cognitive, personal, and social domains.

#### PHYSICAL ACTIVITY AND MOTOR SKILLS

Generally, boys are temperamentally predisposed to be more active than girls. Thus, they have more trouble sitting still for long periods and are less likely to enjoy sedentary activities such as reading (W. O. Eaton & Enns, 1986; Newkirk, 2002). Before puberty, boys and girls seem to have similar *potential* for physical and psychomotor growth, although girls have a slight edge in fine motor skills (e.g., handwriting). But overall, boys develop their physical and motor skills more, perhaps through participation in organized sports (Eccles, 2005; J. R. Thomas & French, 1985). After puberty, boys have a biological advantage in height and muscular strength: They’re taller and, because of increased levels of the male sex hormone testosterone, they’re stronger (Halpern, 2006; Hyde, 2005; J. R. Thomas & French, 1985).

Such differences are hardly justification for favoring either gender when enhancing students’ physical fitness, of course. Physical education curricula and sports programs should provide equal opportunities for boys and girls to maximize their motor skills and physical well-being.

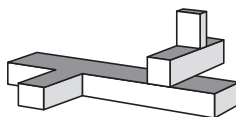
#### COGNITIVE AND ACADEMIC ABILITIES

On average, boys and girls perform similarly on tests of general intelligence, in part because experts who construct the tests eliminate items that favor one group or the other (Halpern & LaMay, 2000). Researchers sometimes do find differences in more specific cognitive abilities, however. The most consistently observed gender difference is in **visual-spatial ability**, the ability to imagine and mentally manipulate two- and three-dimensional figures. As an example of what this ability involves, try the next exercise.

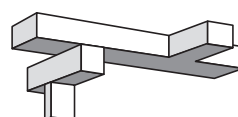
### EXPERIENCING FIRSTHAND

#### MENTAL ROTATION

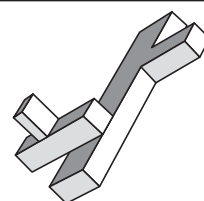
Are the three drawings shown here different rotations of the *same* object, or do they represent two or more *different* objects?




Object A



Object B



Object C

 Make sure that students—especially boys—have frequent opportunities to release pent-up energy.

To correctly answer this question, you must “rotate” the objects in your head. If you mentally rotate Object B 180 degrees, you can see that it represents the same three-dimensional configuration as Object A. But if you rotate the right side of Object C down a bit and toward you, you can see that it’s *not* the same as Object A; instead, it’s a mirror image. Thus, Objects A and B are the same object; Object C is different. On average, males show greater proficiency in such visual–spatial thinking, even in infancy (Gallagher & Kaufman, 2005; Quinn & Liben, 2008). In contrast, females seem to have the advantage in certain verbal skills; for instance, girls have, on average, larger vocabularies and can more quickly think of the words they need to express their thoughts (Halpern, 2004, 2006; Halpern & LaMay, 2000; Lippa, 2002).

However, most gender differences in specific cognitive abilities tend to be *quite small*, with considerable overlap between the two groups (e.g., look once again at Figure 4.1). In addition, boys sometimes show greater *variability* in cognitive abilities than girls do, causing more boys than girls to demonstrate extremely high or low ability levels relative to their age-group (Halpern et al., 2007; Halpern & LaMay, 2000; Valla & Ceci, 2011). Instruction also may equalize some of these relatively small differences; for example, when female students receive instruction on how to select appropriate strategies to solve various spatial problems, the relations of visual–spatial gender differences to achievement are lessened (Stieff, Dixon, Ryu, Kumi, & Hegarty, 2014).

Even though ability levels may be similar, girls consistently earn higher grades in school (Halpern et al., 2007; Halpern & LaMay, 2000). If achievement is measured by achievement tests rather than grades, research findings are inconsistent. When differences are found, girls typically have an advantage in reading and writing, and after puberty boys tend to have the upper hand in complex mathematical problem solving (Halpern, 2006; Halpern & LaMay, 2000; Lindberg, Hyde, Petersen, & Linn, 2010; J. P. Robinson & Lubienski, 2011; Valla & Ceci, 2011). Not only are gender differences in visual–spatial, verbal, and mathematical performance quite small, but some researchers have found them to be getting *smaller* in recent years. In other words, boys and girls are becoming increasingly similar in their academic performance (Hyde, Lindberg, Linn, Ellis, & Williams, 2008; Leaper & Friedman, 2007; Spelke, 2005). Thus, in general, we should expect boys and girls to have similar academic aptitudes for different subject areas.

Nevertheless, recent research suggests that some gender differences in mathematics are attributable to the fact that female students are more likely to worry and experience anxiety than are males, and such feelings can interfere with those female students’ ability to focus on and effectively think about complex mathematics problems (Ganley & Vasilyeva, 2014). In addition, results of a recent study indicate that when female students take a math test immediately before taking a verbal test, they tend to perform worse than do males on the math test; however, when the students take the verbal test first, the females perform as well or better than males on the math test (Smeding, Dumas, Loose, & Régner, 2013). This is most likely because the females experienced stereotype threat when the math test was presented first, and this affected their performance. Therefore, we should be aware that gender differences can result from many causes, including some seemingly insignificant instructional decisions.

### EXPERIENCE WITH TECHNOLOGY

As societies worldwide are gaining increasing access to computers and wireless technologies, boys and girls alike are becoming increasingly proficient with technology—for example, they’re apt to stay in frequent contact with peers by texting and sending photographs on cell phones and by posting messages on social networking websites such as Facebook and Instagram (Greenhow, Robelia, & Hughes, 2009; Valkenburg & Peter, 2009). But overall, boys seem to spend more of their leisure time with technology than girls do. Boys are more likely to play video games, a pastime that may interfere with their reading and writing development but enhances their visual–spatial ability and probably also their comfort and expertise with computers (Feng, Spence, & Pratt, 2007; Ivory, 2006; Lucas & Sherry, 2004; Weis & Cerankosky, 2010). When using educational technology in school, boys may be more confident initially because they may have had more experience using similar technology; however, girls adapt well and generally benefit equally from educational technology (Nietfeld, Shores, & Hoffmann, 2014).

### MOTIVATION IN ACADEMIC ACTIVITIES

On average, girls are more concerned about doing well in school: They’re more engaged in classroom activities, more diligent in completing school assignments, and more likely to graduate



MyEdLab


#### Video Example 4.2.


Most gender differences in specific cognitive abilities are small. Effective, unbiased instruction may equalize differences.




Expect boys and girls to have similar aptitudes for all academic subject areas.


We will discuss motivation in much greater detail in Chapters 10 and 11.


 Make a special effort to motivate boys—for instance, by incorporating their personal interests into classroom activities.

 Help girls understand that taking academic risks and making mistakes reflect their willingness to take on challenges and stretch their abilities in new directions.

Chapter 3 examines aggression in greater detail.

 Communicate that showing emotion is a natural human trait that is appropriate for males as well as females.

 Accommodate girls' affiliative nature by providing numerous opportunities for cooperative group work.

 Occasionally have students work in same-sex pairs or groups.

from high school (H. M. Marks, 2000; Marsh, Martin, & Cheng, 2008; McCall, 1994; J. P. Robinson & Lubienski, 2011). Furthermore, girls are more interested in getting a college education than are boys, and in many countries more females than males earn college degrees (Halpern et al., 2007; National Science Foundation, 2007). However, this eagerness to achieve academically leads girls to prefer tasks at which they know they can succeed, and some find academic failure devastating. On average, boys are more willing to take on academic challenges and risks and more likely to take their failures in stride (Dweck, 2000; Yu, Elder, & Urdan, 1995).

### SENSE OF SELF

Beginning in the upper elementary or middle school grades, boys appear to have a slightly more positive sense of self than do girls. This gender difference seems to be partly due to boys' tendency to *overestimate* their abilities and possibly also to girls' tendency to *underestimate* theirs (Hyde, 2007; Lundeberg & Mohan, 2009; Pajares, 2005). Boys' and girls' self-perceptions also tend to be consistent with stereotypes about what males and females are good at, especially in adolescence. Boys tend to rate themselves more highly in mathematics and sports, whereas girls tend to rate themselves more highly in reading and social studies. Such differences in self-perceptions persist even when boys' and girls' actual ability levels are *equal* (D. A. Cole, Martin, Peeke, Seroczynski, & Fier, 1999; Herbert & Stipek, 2005; Leaper & Friedman, 2007; Wigfield, Byrnes, & Eccles, 2006).

### INTERPERSONAL BEHAVIORS AND RELATIONSHIPS

One of the most consistently observed gender differences involves aggression. In early childhood and throughout the elementary and secondary school years, boys are more physically aggressive than girls, with the difference being especially large for *unprovoked* aggression (Card, Stucky, Sawalani, & Little, 2008; Hyde, 2007; Pellegrini, 2011). However, girls can be equally aggressive in a nonphysical way—for instance, by spreading rumors or snubbing peers (Crick, Grotpeter, & Bigbee, 2002; French, Jansen, & Pidada, 2002; Pellegrini & Archer, 2005). Some of their victims can be emotionally devastated by such treatment (Rudolph, Caldwell, & Conley, 2005). Girls also may be more likely than boys to engage in cyberbullying by using the Internet (Connell, Schell-Busey, Pearce, & Negro, 2013).

Consistent differences are also seen in boys' and girls' interpersonal activities and relationships. Boys tend to congregate in large groups that engage in rough-and-tumble play, organized group games, and physical risk-taking activities (Maccoby, 2002; Pellegrini, Kato, Blatchford, & Baines, 2002; A. J. Rose & Smith, 2009). They enjoy competition and can be fairly assertive in their efforts to achieve their goals (Benenson et al., 2002; Eisenberg, Martin, & Fabes, 1996; Maccoby, 2002). They may often try to hide their true emotions in social situations, putting up a tough, “nothing-can-bother-me” front (Lippa, 2002; Pollack, 2006).

Whereas boys are apt to be competitive, girls are more likely to be affiliative and cooperative. Thus, they tend to form closer relationships with their teachers and to achieve at higher levels when classroom activities involve cooperation rather than competition (Inglehart, Brown, & Vida, 1994; Wentzel, Battle, Russell, & Looney, 2010). When working with instructional software, girls like to form relationships with their virtual “teachers,” and those relationships, even though they are with a computer-generated character, may help to improve attitudes and motivation in subjects such as mathematics (Kim & Lim, 2013). Girls also seem to be more attuned to others' mental states and more sensitive to the subtle, nonverbal messages—the body language—that others communicate (Bosacki, 2000; Deaux, 1984). Girls spend much of their leisure time with one or two close friends, with whom they may share their innermost thoughts and feelings (Leaper & Friedman, 2007; A. J. Rose & Smith, 2009). Although girls can be assertive in making their wishes known, they're also concerned about resolving conflicts and maintaining group harmony, and so they may sometimes subordinate their own needs to those of others (Benenson et al., 2002; Leaper & Friedman, 2007; Rudolph et al., 2005).

### CLASSROOM BEHAVIORS

In part because boys tend to be physically more active than girls, they're more likely to misbehave in class (Altermatt, Jovanovic, & Perry, 1998; Gay, 2006; Sadker & Sadker, 1994). Boys talk more and ask more questions, sometimes without waiting to be called on. They also tend to dominate small-group discussions and work sessions. Girls are more reticent classroom participants. They're less likely to publicly volunteer ideas and ask questions, perhaps for fear of looking stupid or

perhaps because they worry that looking too smart will reduce their popularity (Jovanovic & King, 1998; Sadker & Sadker, 1994; Théberge, 1994; Wentzel, 2009). Girls are more likely to express their opinions in small-group rather than large-group discussions, and they're more likely to assume the role of leader (thereby developing valuable leadership skills) in same-sex groups (Fennema, 1987; MacLean, Sasse, Keating, Stewart, & Miller, 1995; Théberge, 1994).

### CAREER ASPIRATIONS

Historically, boys have had more ambitious career aspirations than girls have. In recent years, however, many girls—especially those in Western countries—have also begun to set their sights on challenging professions. Often, boys and girls alike focus on careers that are stereotypically “appropriate” for their gender, in part because they have greater self-confidence about their ability to succeed in such careers (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Leaper & Friedman, 2007; Weisgram, Bigler, & Liben, 2010). Students' general life goals come into the picture as well: Girls are more likely than boys to consider how their career choices might mesh with their desires to work with people (rather than objects) and to raise a family (Diekman, Brown, Johnston, & Clark, 2010; Eccles, 2009).

Some gender differences are especially prevalent for particular age-groups. Table 4.1 identifies differences you're apt to see at various grade levels and offers relevant classroom strategies for accommodating these differences.

## ORIGINS OF GENDER DIFFERENCES

Obviously, heredity determines basic physical differences between males and females; some are present at birth, some emerge at puberty. And because of inherited differences in sex-related hormones—especially estrogen for girls and testosterone for boys—girls reach puberty earlier and boys eventually become taller and stronger. Hormones may account for certain nonphysical gender differences as well. The gender difference in physical aggression appears to be related to testosterone levels (Lippa, 2002; S. Moore & Rosenthal, 2006). Hormones may also play a role in the small differences observed in visual-spatial and verbal abilities, possibly by affecting neurological development in different areas of the brain (Valla & Ceci, 2011; Vuoksima et al., 2010). Hormones even seem to influence children's preferences for male-stereotypical versus female-stereotypical behaviors (Auyeung et al., 2009; Hines et al., 2002).

Yet environmental factors clearly play a role as well, often by interacting with and amplifying existing biology-based gender differences (Lippa, 2002; Nuttall, Casey, & Pezaris, 2005). Virtually every culture teaches children that some behaviors are more appropriate for males and others more appropriate for females, as the following exercise may show you.

## EXPERIENCING FIRSTHAND

### PICTURE THIS #2

Form a picture in your mind of each of the following individuals. Make note of the *first* image that comes to mind in each case:

Secretary	Scientist
Bank president	Fashion model
Elementary school teacher	Building contractor





Which individuals did you picture as male, and which did you picture as female?

If you're like most people, your secretary, teacher, and fashion model were females, and your bank president, scientist, and building contractor were males. Gender stereotypes persist throughout our society, and even preschool children are aware of them (Bornholt, Goodnow, & Cooney, 1994; Eisenberg et al., 1996; Nosek & Smyth, 2011).

Numerous aspects of society conspire to socialize growing children to conform to gender stereotypes. For example, many adults believe—and communicate the message—that boys are “naturally” better in some domains (e.g., math) and that girls are “naturally” better in others

# DEVELOPMENTAL TRENDS

TABLE 4.1 • Gender-Related Characteristics at Different Grade Levels

GRADE LEVEL	AGE-TYPICAL CHARACTERISTICS	EXAMPLE	SUGGESTED STRATEGIES
 <b>K–2</b>	<ul style="list-style-type: none"> <li>Physical abilities, general intelligence, and more specific cognitive abilities roughly equivalent for boys and girls</li> <li>More self-control in girls than in boys, leading to girls' easier adjustment to a classroom environment</li> <li>Rigid stereotypes about gender-appropriate behavior; eagerness to conform to these stereotypes</li> <li>Play groups largely segregated by gender</li> <li>Different themes in fantasy play (e.g., boys depict heroism, girls depict romance); play activities more active and forceful for boys than for girls</li> </ul>	<p>Most of the girls in a first-grade class can sit still during small-group reading instruction, but some of the boys quickly become fidgety and distracted. The boys are more likely to be attentive in their reading groups if they can physically act out a story they're reading.</p>	<ul style="list-style-type: none"> <li>Expect and encourage equal achievement in all areas of the academic curriculum.</li> <li>Give students whatever structure they may need to stay on task in order to acquire basic skills, but also give them numerous opportunities to release pent-up energy.</li> <li>Provide materials for a wide range of play activities (e.g., household items, dress-up clothes, toy trucks, building blocks, balls).</li> <li>Monitor students' play activities for potentially dangerous behaviors; provide guidance about which actions are and are not safe.</li> </ul>
 <b>3–5</b>	<ul style="list-style-type: none"> <li>Gender differences in self-evaluations of math ability, with boys rating themselves more highly than girls despite equal math achievement</li> <li>Play groups largely segregated by gender</li> <li>Organized large-group games more common for boys than for girls</li> <li>More competition, aggression, and risk taking in boys than in girls</li> <li>Onset of puberty earlier for girls (average age 10)</li> <li>Tendency for some early-maturing girls to feel out of sync with peers, putting them at greater risk for depression</li> </ul>	<p>During recess, many of the boys in a fourth-grade class organize a game of baseball or soccer. A few girls join in, but most of the girls stand on the sidelines and talk with one or two friends.</p>	<ul style="list-style-type: none"> <li>Assure students that boys and girls have equal potential in all areas of the academic curriculum.</li> <li>Provide materials for group games (balls, bats, soccer goal nets, etc.).</li> <li>Set and enforce reasonable limits on play behaviors so that students' physical safety is ensured.</li> <li>Be especially sensitive and supportive as girls show signs of puberty (e.g., allow trips to the restroom as needed).</li> </ul>
 <b>6–8</b>	<ul style="list-style-type: none"> <li>Onset of puberty later for boys (average age 11½)</li> <li>Greater physical ability for boys than for girls; participation in sports more widespread and prestigious for boys</li> <li>Emergence of gender differences in overall self-esteem and assessments of physical attractiveness and athletic competence, with self-ratings being higher for boys and preoccupation with physical appearance being greater for girls</li> <li>Increasing flexibility about which behaviors are gender-appropriate, especially for girls</li> <li>Tendency for boys' social groups to be larger and less intimate than girls'</li> <li>More emotional distress for girls than for boys when interpersonal relationships go badly; tendency for boys to try to hide feelings of sadness and distress</li> </ul>	<p>A student named Jason explains how he often hides his feelings at school: "If something happens to you, you have to say, 'Yeah, no big deal,' even when you're really hurting . . . I've punched so many lockers in my life, it's not even funny. When I get home, I'll cry about it."</p>	<ul style="list-style-type: none"> <li>Respect students' modesty and need for privacy when they must change clothes or take a shower in physical education or after-school sports.</li> <li>Encourage students to gain skills in domains stereotypically associated with the other gender (e.g., teach cooking and woodworking to boys and girls alike).</li> <li>Encourage both boys and girls to pursue extracurricular sports activities; encourage attendance at both boys' and girls' sports events.</li> <li>In appropriate contexts, teach good grooming habits and other skills for presenting oneself well to others.</li> <li>Communicate to boys that occasionally showing emotion and vulnerability is both manly and healthy.</li> </ul>
 <b>9–12</b>	<ul style="list-style-type: none"> <li>Gradual improvement in girls' self-assessments of physical attractiveness</li> <li>Greater interest in a college education among girls than among boys</li> <li>Boys more likely to avoid academic work than girls.</li> <li>Tendency for boys to aspire more to hands-on professions (e.g., working with tools and machines) and for girls to aspire more to social or artistic occupations (e.g., teaching, counseling, writing)</li> <li>Prosocial behavior seen more frequently in girls than in boys, despite equal ability to act prosocially</li> <li>Substance abuse and casual sexual intercourse more common in boys than in girls</li> <li>Depression and eating disorders more common in girls than in boys</li> </ul>	<p>Most members of a high school service club are girls. The club plans two community service projects for the year: making monthly after-school trips to a local nursing home and conducting a schoolwide fundraiser to buy holiday gifts for low-income children.</p>	<ul style="list-style-type: none"> <li>Encourage students to cross stereotypical boundaries in course selection (e.g., girls taking advanced math, boys taking creative writing).</li> <li>Provide information about the benefits of a college education (e.g., invite recent high school graduates and adult college graduates from similar cultural groups to those of the student population to come and share their college experiences).</li> <li>Expose students to diverse occupations and professions through guest lectures, trips to community businesses and agencies, and the like.</li> <li>Work with colleagues and parents to vigorously address unhealthy and risky out-of-school behaviors.</li> <li>Alert the school counselor when you suspect substance abuse, serious depression, an eating disorder, or some other potentially life-threatening condition.</li> </ul>

Sources: E. M. Anderman, 2012; Benenson & Christakos, 2003; Binns, Steinberg, Amorosi, & Cuevas, 1997; Bussey & Bandura, 1992; Card, Stucky, Sawalani, & Little, 2008; D. A. Cole et al., 2001; Crouter, Whiteman, McHale, & Osgood, 2007; Davenport et al., 1998; Davila, 2008; Eisenberg et al., 1996; Evans-Winters & Ivie, 2009; Fabes, Martin, & Hanish, 2003; M. E. Ford, 1996; Grusec & Hastings, 2007; Halpern, 2004, 2006; Halpern et al., 2007; Hankin, Mermelstein, & Roesch, 2007; M. S. Hardy, 2002; J. R. Harris, 1995; Harter, 1999; Hayward, 2003; Herbert & Stipek, 2005; Hyde, 2005; Hyde & Durik, 2005; Leaper & Friedman, 2007; Liben & Bigler, 2002; Lippa, 2002; Maccoby, 2002; Matthews, Ponitz, & Morrison, 2009; T. M. McDevitt & Ormrod, 2013; S. Moore & Rosenthal, 2006; Passolunghi, Rueda Ferreira, & Tomasello, 2014; Pollack, 2006, p. 72 (Jason example); Ponitz, Rimm-Kaufman, Brock, & Nathanson, 2009; M. Rhodes & Gelman, 2008; Rogoff, 2003; A. J. Rose & Smith, 2009; Rudolph et al., 2005; R. M. Ryan & Kuczowski, 1994; Sadker & Sadker, 1994; Seiffge-Krenke, Auncla, & Nurmi, 2009; Skoog, & Stattin, 2014; J. R. Thomas & French, 1985; Wigfield, Byrnes, & Eccles, 2006; Wigfield, Eccles, & Pintrich, 1996; Zambo & Brozo, 2009 (reading group example).



(e.g., reading), even in cases where no gender differences in achievement exist (Bleeker & Jacobs, 2004; Eccles, 2009; Herbert & Stipek, 2005). The toys that children get also are often marketed specifically for boys and girls; results of a recent study indicated that toys marketed on the Disney store website vary greatly by color, with bold-colored toys (e.g., red, black, brown, or gray) marketed toward boys, and pastel-colored toys (e.g., pink and purple) marketed toward girls (Auster & Mansbach, 2012). Such gender-stereotypical toys and games can also have impact: The dolls and board games that girls often get foster verbal and social skills, whereas the building blocks and soccer balls that boys get are more apt to foster visual–spatial skills (Feng et al., 2007; Frost, Shin, & Jacobs, 1998; Liss, 1983; Lytton & Romney, 1991).

Boys' and girls' personality characteristics, too, are socialized to some degree. Especially in cultural groups that espouse traditional gender roles, boys are often reinforced—by adults and peers alike—for being assertive and aggressive, whereas girls are encouraged to be restrained and nurturing (Leaper & Friedman, 2007; Manning & Baruth, 2009; Rothbart, 2011). And television and video games often portray males as aggressive leaders and successful problem solvers, whereas females are depicted as demure, obedient followers (Furnham & Mak, 1999; Leaper & Friedman, 2007; M. K. Miller & Summers, 2007; T. L. Thompson & Zerbinos, 1995).

As young children become increasingly aware of the typical characteristics and behaviors of boys, girls, men, and women, they gradually pull their knowledge together into self-constructed understandings, or **gender schemas**, of how males and females are different. These gender schemas, in turn, become part of their sense of self and guide them in their choices and behaviors. By the time children reach school age, much of the pressure to act “appropriately” for their gender comes from within rather than from others (Bem, 1981; Eccles, 2009; Ruble, Martin, & Berenbaum, 2006).

Because gender schemas are self-constructed, their contents vary considerably from one individual to another (Liben & Bigler, 2002). For example, in adolescence some girls incorporate into their “female” schema unrealistic standards of beauty presented in popular media (films, fashion magazines, Internet sites, etc.). As girls compare themselves to these standards, they almost invariably come up short, and their self-assessments of physical attractiveness decline. In an effort to achieve the super-thin bodies they believe to be ideal, they may fall victim to eating disorders (Attie, Brooks-Gunn, & Petersen, 1990; Weichold, Silbereisen, & Schmitt-Rodermund, 2003). Likewise, some teenage boys go out of their way to meet self-constructed macho standards of male behavior by putting on a tough-guy act at school and bragging (perhaps accurately, but more often not) about their many sexual conquests (Pollack, 2006; K. M. Williams, 2001a).


Not all students have rigid or unrealistic stereotypes of what their gender should be like, of course. In fact, as students get older, many become increasingly flexible about what males and females can and should do. Those with more flexible gender schemas are more likely to pursue counterstereotypical interests and career paths (Liben & Bigler, 2002; C. L. Martin & Ruble, 2004).

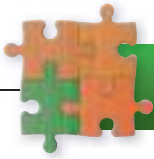
## MAKING APPROPRIATE ACCOMMODATIONS FOR GENDER DIFFERENCES

Despite many teachers' best intentions to treat male and female students equitably, subtle inequities continue. For example, teachers tend to give more attention to boys, partly because boys ask more questions and present more discipline problems. Teachers give boys more feedback—praise and criticism alike—than they give girls (Altermatt et al., 1998; Eisenberg et al., 1996; Gay, 2006; Halpern et al., 2007; S. M. Jones & Dindia, 2004). Teachers also tend to overestimate boys' abilities and underestimate girls' abilities in some subject areas, such as math (American Friends of Tel Aviv University, 2015).

The Into the Classroom feature “Promoting Gender Equity” offers several general suggestions for equitably fostering the learning and development of both sexes. At the same time, gender differences sometimes *do* warrant differential treatment of girls and boys. For example, girls are likely to improve their visual–spatial ability if we give them frequent opportunities to engage in activities requiring visual–spatial thinking (B. M. Casey et al., 2008; Gallagher & Kaufman, 2005). Girls also are more likely to benefit from computer software used during mathematics instruction when such programs include female characters and when those programs provide help options for users (Arroyo, Burleson, Tai, Muldner, & Woolf, 2013). Meanwhile, boys are more likely to improve their literacy skills if we allow them to pursue typical “boy” interests (e.g., sports, adventure) while reading and writing (Newkirk, 2002). In recent years, some educators have advocated for single-sex schools.

Self-imposed adherence to gender stereotypes is an example of self-socialization, a concept described in Chapter 3.

 Acknowledge that some differential treatment of girls and boys is appropriate, especially if it helps to *reduce* gender gaps in particular abilities and predispositions.



## Into The Classroom

### Promoting Gender Equity

- Use your knowledge of typical gender differences to create greater equity for males and females, not to form expectations about how well males and females are likely to perform in various activities.

An elementary physical education teacher realizes that most of the girls in her class probably haven't had as much experience as the boys in throwing a baseball or softball overhand, so she gives the girls extra instruction and practice in the overhand throw.

- When planning lessons and instructional strategies, consider typical interests and activity levels of both boys and girls.

A sixth-grade math teacher teams up with his school's information technology teacher to create a month-long unit in which students learn how to use Game Maker, software that enables them to create simple video games using a variety of animated characters, graphics, and background music. The students then work in small groups to design games that will help them practice a particular mathematical concept or skill. At the end of the unit, each group demonstrates its game for the class, and the teachers post the games to their class websites so that students can play them at home.

- Use curriculum materials that represent both genders in a positive and competent light; include materials that portray both genders competently engaging in counterstereotypical behaviors.

An English teacher assigns Harper Lee's *To Kill a Mockingbird*, in which an attorney named Atticus Finch is portrayed as a gentle, affectionate, and compassionate man, and his daughter Scout is portrayed as a courageous and adventuresome 8-year-old. The teacher also assigns Zora Neale Hurston's *Their Eyes Were Watching God*, in which an African American woman grows from a teenager who depends on others to meet her needs into a self-sufficient woman who can easily fend for herself.

- Monitor yourself to see whether you are unintentionally treating boys and girls in ways that limit the learning opportunities of one gender.

A chemistry teacher decides to count the number of times he calls on boys and girls during class. He finds that he calls on boys more than three times as frequently as girls, partly because the boys raise their hands more often. Therefore he institutes a new procedure: He alternates between boys and girls when he calls on students, and he sometimes calls on students who aren't raising their hands.

Although there may be some social benefits to such settings, however, math and science achievement do not appear to be affected by attending a single-sex school (Pahlke, Hyde, & Mertz, 2013).

We must also help students recognize that gender stereotypes are just that—*stereotypes*—and don't necessarily limit what males and females can or should be. For example, we can:

- Expose students to same-gender adults and peers who excel in domains commonly associated with the opposite gender.
- Talk about the importance of all academic subject areas for students' future success.
- Explain the historical roots of stereotypes. For instance, explain that differing expectations for males and females are a holdover from an era when many jobs outside the home required considerable strength (and thus were better suited for men) and jobs inside the home could easily be combined with breast-feeding (and thus were better suited for women).
- Engage students in discussions about the adverse consequences of rigid gender roles—noting, for example, that adhering to such roles limits people's options and results in a lot of talent going to waste. (Bem, 1983, 1984; Evans-Winters & Ivie, 2009; Fennema, 1987; Huguet & Régner, 2007; A. Kelly & Smail, 1986; Pollack, 2006)

#### MyEdLab Self-Check 4.2

**MyEdLab Application Exercise 4.3.** In this interactive exercise you can practice identifying strategies for accommodating gender differences in the classroom.



## Socioeconomic Differences

The concept of **socioeconomic status (SES)** encompasses a number of variables, including family income, parents' education levels, and parents' occupations. A family's socioeconomic status—whether high-SES, middle-SES, or low-SES—gives us a sense of family members' standing in the

community: what type of neighborhood they live in, how much influence they have on political decision making, what educational opportunities are available to them, what resources they have available in their homes, and so on.

Students' school performance is correlated with their socioeconomic status: Higher-SES students tend to have higher academic achievement, and lower-SES students tend to be at greater risk for dropping out of school (J.-S. Lee & Bowen, 2006; Sirin, 2005; Tucker-Drob, 2013). As students from lower-SES families move through the grade levels, they tend to fall further and further behind their higher-SES peers (American Psychological Association, 2012; Farkas, 2008; Jimerson, Egeland, & Teo, 1999). Lower-SES students often live in neighborhoods with fewer economic and educational resources, both of which contribute to lower achievement for these students (Dupere, Leventhal, Crosnoe, & Dion, 2010). When researchers find achievement differences among students from different ethnic groups, the differences in the students' socioeconomic status—not their cultural differences—seem to be mostly to blame (Byrnes, 2003; N. E. Hill, Bush, & Roosa, 2003; Murdock, 2000).

Life certainly isn't perfect for students from high-SES homes (Luthar, 2006; Luthar & Latendresse, 2005). Some high-income parents have such high expectations for their children's achievement that the children suffer from significant anxiety and depression. In addition, some high-income parents have demanding jobs that keep them both physically and emotionally distant from their children, thereby limiting the guidance and support they provide. But by and large it's children who live in poverty, especially *chronic* poverty, who face the most significant obstacles to academic success and personal well-being.

## EXPERIENCING FIRSTHAND

### HOMEWORK ON THE INTERNET

Imagine that you are teaching fifth grade in an elementary school that has adopted a fully online mathematics program. Your school has adequate technology resources, and your students are able to work on computers in school every day. In addition, all of the homework assignments are completed online.

Cindy, a student in your class, approaches you and says "I don't have Internet at home." She then adds, "I don't even have a computer; my family says we can't afford one."

What should you do?

Unfortunately, this situation is not uncommon. As more schools are adopting curricula that are only provided online, access to the Internet is becoming essential. Nevertheless, students from low-SES neighborhoods are less likely to have this access. For some families, the only alternative is to take their children to local libraries to do their homework, and use computers that are available at those locations. Nevertheless, having to take a child to a library every night to do homework may be very stressful, particularly for parents who also work full time or do not have transportation. As teachers, we can provide students like Cindy with alternative resources. For example, we can print out the assignments for these students and send home paper copies.

## CHALLENGES ASSOCIATED WITH POVERTY

Many, many children grow up in poverty, including more than 16 million children (22%) in the United States (U.S. Census Bureau, 2010). Some of these children live in inner-city neighborhoods, but others live in rural areas or in modest apartments in wealthy suburbs. Some come from families that can meet life's basic necessities (e.g., food, warm clothing, adequate shelter) but have little money left over for luxuries. Many others live in extreme poverty; these students are the ones most at risk for academic failure and thus most in need of our attention and support.

Several factors tend to contribute to the generally lower school achievement of low-SES students. Students who face only one or two of these challenges often do quite well in school, but those who face many or all of them are at high risk for academic failure and other negative outcomes (Becker & Luthar, 2002; Gerard & Buehler, 2004; Grissmer, Williamson, Kirby, & Berends, 1998).

**Poor nutrition and health.** Lower-income families have fewer financial resources to ensure that their children have adequate nutrition and health care. Poor nutrition in the early years



Help families apply for free and reduced-cost meal programs. Refer students with chronic health problems to the school nurse.

of life (including the 9 months before birth) can lead to impairments in children's attention, memory, and learning ability (Aboud & Yousafzai, 2015; Noble, Tottenham, & Casey, 2005). Poor nutrition seems to influence school achievement both directly—for example, by hampering early brain development—and indirectly—for example, by leaving children listless and inattentive in class (Ashiabi & O'Neal, 2008; Sigman & Whaley, 1998). And inadequate health care means that some conditions that interfere with school attendance and performance, such as asthma and hearing problems, go unaddressed (Berliner, 2005).

**Inadequate housing and frequent moves.** Many poor children live in tight quarters, perhaps sharing one or two rooms with several other family members (Hawkins, 1997; Hernandez, Denton, & Macartney, 2008). Furthermore, children who move frequently from one rental apartment to another must often change schools as well. In the process they lose existing social support networks—both with teachers and with peers—and may miss lessons on fundamental academic skills (Croninger & Valli, 2009; Gruman, Harachi, Abbott, Catalano, & Fleming, 2008; Hattie, 2009).

**Exposure to toxic substances.** Especially when children live in poor, inner-city neighborhoods, their surroundings may expose them to excessive levels of environmental toxins that can seriously jeopardize their health and brain development (Hubbs-Tait, Nation, Krebs, & Bellinger, 2005; Koger, Schettler, & Weiss, 2005). For example, in old, badly maintained apartment buildings, children may be exposed to lead in the dust from deteriorating paint. In addition, the city water supply may contain pesticides or industrial waste, and the local air may be polluted by power plants and industrial incinerators.

**Unhealthy social environments.** On average, low-SES neighborhoods and communities have higher frequencies of violence and vandalism, greater prevalence of alcoholism and drug abuse, and greater numbers of antisocial peers. Furthermore, there are fewer productive outlets for leisure time—libraries, recreation centers, sports leagues, and so on—and fewer positive adult role models. Such factors appear to be partly responsible for the lower academic achievement of students who live in poverty (Aikens & Barbarin, 2008; T. D. Cook, Herman, Phillips, & Settersten, 2002; Duncan & Magnuson, 2005; Leventhal & Brooks-Gunn, 2000; Milam, Furr-Holden, & Leaf, 2010; Nettles, Caughy, & O'Campo, 2008).

**Emotional stress.** Students at all income levels experience stressful conditions at one time or another, but students from low-income families have more than their share. On average, low-SES homes are more chaotic and unpredictable than affluent ones. Children may wonder where their next meal is coming from or when the landlord might evict them for not paying rent. The preponderance of single-parent homes among low-SES families can come into play as well: A single parent may be too distracted by personal problems to offer much affection or consistent discipline. As a result of such factors, students from low-SES families show higher-than-average rates of depression and other emotional problems (Crosnoe & Cooper, 2010; G. W. Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005; Foulds, Wells, & Mulder, 2014; Morales & Guerra, 2006; Parke et al., 2004). Sometimes, too, chronic stress adversely affects students' physical development, which in turn can hamper their cognitive development (G. W. Evans & Schamberg, 2009).

Not all children from low-income homes live in chronically stressful conditions, of course, and those whose families provide consistent support, guidance, and discipline generally enjoy good mental health (N. E. Hill et al., 2003; M. O. Wright & Masten, 2006). Nevertheless, we should continually be on the lookout for signs that certain students are experiencing unusual stress at home and then provide whatever support we can. In some instances effective support may involve nothing more than being a willing listener. In other cases we may want to consult with a school counselor, school psychologist, or social worker about possible support systems at school and resources in the local community.



Provide emotional support and appropriate referrals when students seem to be undergoing exceptional stress at home.

**Gaps in background knowledge.** Some students from low-SES families lack the basic knowledge and skills (e.g., knowledge of letters and numbers) on which successful school learning so often depends (Aikens & Barbarin, 2008; Brooks-Gunn, Linver, & Fauth, 2005; Siegler, 2008).

Access to early educational opportunities that might foster such skills—books, computers, trips to zoos and museums, and so on—is always somewhat dependent on a family’s financial resources. In addition, some parents have few basic academic skills that they might share with their children. However, as always, we must be careful not to overgeneralize. Some low-income parents have considerable education (perhaps a college degree) and may be well equipped to read to their children and provide other enriching educational experiences (Goldenberg, 2001; Raikes et al., 2006; Sidel, 1996).

**Lower-quality schools.** Unfortunately, the students who most need good schools are often least likely to have them. Schools in low-income neighborhoods and communities tend to receive less funding and, as a result, are often poorly equipped and maintained. Teacher turnover rates are high in these schools, and disciplinary tactics tend to be more harsh and less effective. Furthermore, some teachers at these schools have low expectations for students, offering a less-challenging curriculum, assigning less homework, and providing fewer opportunities to develop advanced thinking skills than do teachers in wealthier school districts (G. W. Evans, 2004; McLoyd, 1998; Pianta & Hamre, 2009; Raudenbush, 2009).

Of course, schools in low-income school districts don’t have to be this way. In fact, we teachers can make a *huge* difference in the quality of children’s educational experiences at even the poorest of schools. Consider a teacher whom researchers called Miss A (E. Pedersen, Faucher, & Eaton, 1978):

Miss A taught at Ray School, an elementary school in a large, North American city. The school building—constructed like a fortress, with iron bars on its windows—was hardly appealing or welcoming. Its neighbors included old tenement buildings, a junkyard, and a brothel. Fewer than 10% of its students eventually completed high school.


Nonetheless, Miss A worked wonders with the students in her first-grade classes. She showed obvious affection for them, insisted on appropriate behavior without ever losing her temper, and shared her lunch with those who hadn’t brought one. She continually hammered home the importance of learning and education and had high expectations for achievement. She made sure her students learned to read, and she stayed after school with them whenever they needed extra help.

Miss A’s students got higher grades than students in other classes not only in their first-grade year but also for several years after that. On average, their IQ scores went *up* between third and sixth grade (one girl’s score changed from 93 to 126), whereas the IQs of most students at Ray School went down. When researchers tracked down some of Miss A’s students many years later, they found that these students were far more financially and professionally successful than the typical Ray graduate. And every single one of them remembered her name.

## FOSTERING RESILIENCE

Thanks in part to teachers like Miss A, many students of low-income families succeed in school despite exceptional hardships. Some are **resilient students** who acquire characteristics and coping skills that help them rise above their adverse circumstances. As a group, resilient students have likable personalities, a positive sense of self, and ambitious goals, and they believe that success comes with hard work and a good education (S. Goldstein & Brooks, 2006; Schoon, 2006; Werner & Smith, 2001).

Researchers have learned a great deal about factors that can foster resilience in students from challenging backgrounds. With their findings in mind, we offer the following suggestions.

-  *Be a dependable source of academic and emotional support.* Resilient students usually have one or more individuals in their lives whom they trust and can turn to in difficult times (Masten, 2001; McLoyd, 1998; Werner, 1995, 2006). For example, resilient students often mention teachers who have taken a personal interest in them and been instrumental in their school success (R. M. Clark, 1983; McMillan & Reed, 1994; D. A. O’Donnell, Schwab-Stone, & Muyeed, 2002). As teachers, we’re most likely to promote resilience in low-SES students when we show that we like and respect them, are available and willing to listen to their concerns, hold high expectations for their performance, and provide the encouragement



Identify and address any missing basic skills.



Be optimistic that you can make a difference in students’ lives.




Remember that many bright, capable students come from low-income families.




## MyEdLab

## Video Example 4.3.


Students living in poverty face many challenges. Their basic needs for food, shelter, and clothing may not be met. They often move and change schools, experience emotional stress, and develop gaps in academic knowledge. Teachers can foster resilience by developing caring relationships.

 Balance any needed instruction in basic skills with challenging and engaging real-world activities.

and support they need to succeed both inside and outside the classroom (Kincheloe, 2009; Masten & Coatsworth, 1998; Milner, 2006; Schoon, 2006).

 *Build on students' strengths.* Although some students from lower-SES backgrounds may lag behind in basic academic skills, they're apt to bring many strengths to the classroom. For example, these students are often quite clever at improvising with everyday objects. If they hold part-time jobs to help their families make ends meet, they may have a good understanding of the working world. If they are children of single, working parents, they may know far more than their classmates about cooking, cleaning house, and taking care of younger siblings. Their own scarce resources are likely to have instilled genuine empathy for and generosity toward other people in need. And many of these students are quite knowledgeable about certain aspects of popular culture—characters and plot lines in television shows, lyrics from current songs, and so on (Freedom Writers, 1999; Kraus, Piff, & Keltner, 2011; Lareau, 2003; Torrance, 1995).

As teachers, then, we must remember that students who have grown up in poverty may, in some respects, have more knowledge and skills than their economically advantaged peers. Such knowledge and skills can often provide a basis for teaching classroom subject matter (Schoon, 2006; Varelas & Pappas, 2006). Furthermore, students who are willing to talk about challenges they have faced can sensitize their classmates to serious inequities in today's society.



 *Identify and provide missing resources and experiences important for successful learning.* Some students from very poor families lack basic essentials—such as nutritious meals, warm clothing, adequate health care, and school supplies—that will be important for their academic success. Many government programs and community agencies can help to provide such essentials. School districts offer free and reduced-cost meal programs for children from low-income families. Charitable organizations often distribute warm winter jackets gathered from annual clothing drives. Many communities have low-cost health clinics. And some office supply stores and large discount chains donate notebooks, pens, and other school supplies to children who need them.

Beyond connecting low-income students and families with community resources, we should identify any basic experiences that students may not have had. Field trips to zoos, farms, the mountains, or the ocean may be in order. And of course, we should identify and teach any basic skills that, for whatever reason, students haven't yet acquired. When we do so, we're likely to see significant improvements in students' classroom performance (S. A. Griffin, Case, & Capodilupo, 1995; G. Phillips, McNaughton, & MacDonald, 2004; Siegler, 2009). However, we must be careful not to focus *exclusively* on basic skills, especially when doing so means a fair amount of drill and practice. Students' academic progress will suffer over the long run if they don't also have frequent opportunities to engage in complex academic tasks—reading for understanding, mastering new technologies, solving real-world problems, and so on (Cazden, 2001; Reis, McCoach, Little, Muller, & Kaniskan, 2011).

## WORKING WITH HOMELESS STUDENTS

Children of homeless families typically face far greater challenges than other students from low-income families. Many have chronic physical problems, limited social support networks, significant mental health issues, and inappropriate behaviors. Some may be reluctant to come to school because they lack bathing facilities and suitable clothing, and some may even be runaways. Others may have moved so frequently from one school to another that they have large gaps in their academic skills (Coe, Salamon, & Molnar, 1991; McLoyd, 1998; P. M. Miller, 2011; Polakow, 2007).

As teachers, we too face extra challenges when teaching students who live in homeless shelters. Following are several suggestions for giving these students the support they may need to achieve academic and social success at school (Pawlas, 1994):

-  Pair new students with classmates who can provide guidance and assistance—for example, by explaining school procedures and making introductions to other students.
-  Provide a notebook, clipboard, or other portable “desk” on which students can do their homework at the shelter.

- Find adult or teenage volunteers to serve as tutors at the shelter.
- Meet with students' parents at the shelter rather than at school.
- Share copies of homework assignments, school calendars, and newsletters with shelter officials.

When we use such strategies, however, we must keep in mind that students and their families are apt to feel embarrassed about their homeless status (Polakow, 2007). Accordingly, showing respect for their privacy and self-esteem must be a high priority. If you believe that a student may be homeless because she may have run away from home, contact professionals in your school (e.g., school social workers, school counselors, or school psychologists) who may be able to assist by finding appropriate resources for the student. Sometimes these individuals can be admitted into a temporary facility for homeless or runaway youth, which may provide short-term benefits (Slesnick, Dashora, Letcher, Erdem, & Serovich, 2009).

#### MyEdLab Self-Check 4.3

**MyEdLab Application Exercise 4.4.** In this exercise you can apply what you have learned about helping students with socioeconomic differences succeed in the classroom by fostering resilience with emotional and academic support.

## Students at Risk

**Students at risk** are those with a high probability of failing to acquire the minimum academic skills necessary for success in the adult world. Many students at risk drop out before high school graduation, and many others graduate without mastery of basic skills in reading or mathematics (e.g., Boling & Evans, 2008; Laird, Kienzl, DeBell, & Chapman, 2007; U.S. Department of Education, 2015). Some students are at risk for dropping out of school earlier than are others. Results of a national study of students who were in the ninth grade during the 2009 academic year indicated that 2.7% of those students had dropped out of high school by the time they should have been in the 11th grade.

A common assumption is that the reasons for dropping out lie primarily in the students themselves (V. E. Lee & Burkam, 2003). But as we will see, school characteristics also play a significant role.

Some schools have been referred to as “dropout factories” (American Psychological Association, 2012). These schools have extraordinarily high dropout rates, and many are in areas of high poverty. Data suggest that in the United States, there are about 2,000 high schools in which the ninth-grade class decreases by at least 40% by the time those students should be high school seniors (Balfanz & Legters, 2004).

### CHARACTERISTICS OF STUDENTS AT RISK

Students at risk come from all socioeconomic levels, but children of poor, single-parent families are especially likely to leave school before high school graduation. Boys are more likely than girls to drop out, and African Americans, Hispanics, and Native Americans are more likely than European American and Asian American students to drop out. Also, students in large cities and rural areas are more likely to drop out than students in the suburbs are; graduation rates in some big cities are less than 40% (C. Chapman, Laird, & KewalRamani, 2010; Hardré & Reeve, 2003; L. S. Miller, 1995; National Research Council, 2004).

Students at risk, especially those who eventually drop out, typically have some or all of the following characteristics:

- A history of academic failure.* On average, students who drop out have poorer reading and study skills, achieve at lower levels, have less confidence in their academic ability, and are more likely to have repeated a grade than their classmates who graduate. Consistent patterns of low achievement are sometimes seen as early as third grade (Christle, Jolivet, & Nelson, 2007; Fan & Wolters, 2012; Hattie, 2009; Korhonen, Linnanmäki, & Aunio, 2014; Suh, Suh, & Houston, 2007).

- *Emotional and behavioral problems.* Potential dropouts tend to have lower self-esteem than their more successful classmates. They're also more likely to exhibit serious behavioral problems (e.g., fighting, substance abuse) both in and out of school. Often their close friends are low-achieving and, in some cases, antisocial peers (Battin-Pearson et al., 2000; Garnier, Stein, & Jacobs, 1997; Jozefowicz, Arbreton, Eccles, Barber, & Colarossi, 1994; Suh et al., 2007).
- *Lack of psychological attachment to school.* Students at risk for academic failure are less likely to identify with their school or to perceive themselves as being a vital part of the school community. For example, they engage in few extracurricular activities and are apt to express dissatisfaction with school in general (Christenson & Thurlow, 2004; Hymel, Comfort, Schonert-Reichl, & McDougall, 1996; Rumberger, 1995).
- *Increasing disengagement with school.* Dropping out isn't necessarily an all-or-nothing event. Many high school dropouts show lesser forms of dropping out many years before they officially leave school. Future dropouts are absent from school more frequently than their peers, even in the elementary grades. In addition, they're more likely to have been suspended from school and to show a long-term pattern of dropping out, returning to school, and dropping out again (Christenson & Thurlow, 2004; Suh et al., 2007).

The characteristics just described certainly aren't surefire indicators of which students will drop out, however. For example, some dropouts come from two-parent, middle-income homes, and some are actively involved in school activities almost until the time they drop out (Hymel et al., 1996; Janosz, Le Blanc, Boulerice, & Tremblay, 2000).

## WHY STUDENTS DROP OUT

Students drop out for a variety of reasons. Some have little family and peer encouragement and support for school success. Others have extenuating life circumstances; perhaps they have medical problems, take a job to help support the family, become depressed, or get pregnant. Many simply become dissatisfied with school: They find the school environment unwelcoming or dangerous, perceive the curriculum to be boring and personally irrelevant, become victims of teasing or bullying, are absent often, or doubt that they can pass the high-stakes achievement tests on which graduation depends (Balfanz, Herzog, & Mac Iver, 2007; Brayboy & Searle, 2007; Cornell, Gregory, Huang, & Fan, 2013; Hardré & Reeve, 2003; Hursh, 2007; Quiroga, Janosz, Bisset, & Morin, 2013).

Sadly, teacher behaviors can enter into the picture as well. For example, a teacher might communicate low expectations for students' achievement either explicitly (e.g., by telling them that their chances of earning passing grades are slim) or implicitly (e.g., by brushing off their requests for assistance on assigned tasks). Students are more likely to drop out when they perceive their teachers to be uninterested in helping them succeed (Becker & Luthar, 2002; Farrell, 1990; Suh et al., 2007).

## SUPPORTING STUDENTS AT RISK

Because students who are at risk for academic failure are a diverse group of individuals with a diverse set of needs, there is no single strategy that can keep all of them in school until high school graduation (Christenson & Thurlow, 2004; Janosz et al., 2000). Nevertheless, effective school and classroom practices will go a long way in helping these students stay on the road to academic success and high school graduation. Following are several suggestions based on research findings.

- *Identify students at risk as early as possible.* We begin to see indicators of dropping out, such as low school achievement and high absenteeism, as early as elementary school. And other signs—such as disruptive behavior and lack of involvement in school activities—often appear years before students officially withdraw from school. Therefore it's quite possible to identify at-risk students early in their school careers and take steps to prevent or remediate academic difficulties before they become insurmountable. Schools can integrate methods for tracking these at-risk students into their data systems so that the students' progress over time can be easily tracked. For students at risk, prevention, early intervention, and long-term support are more effective than later, short-term efforts (Brooks-Gunn, 2003; Christenson & Thurlow, 2004; Institute of Education Sciences, 2008).

Chapter 15 looks more closely at the effects of high-stakes testing.



MyEdLab

### Video Example 4.4.

Students at risk often have a history of academic failure and feel little or no attachment to their school. Teachers and schools can make a difference by creating a culture of caring support and making systemic efforts to engage these students academically.

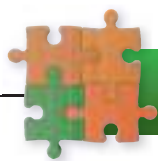


■ *Create a warm, supportive school and classroom atmosphere.* Teachers and schools that have high success rates with students at risk tend to be those that communicate a sense of caring, concern, and high regard for students (Christenson & Thurlow, 2004; Hamre & Pianta, 2005; Pianta, 1999). Particularly useful is the provision of an adult advocate for at-risk students; these advocates are specific individuals who are assigned to at-risk students. The relationships that students develop with these advocates can be effective in identifying resources to help the students with both short-term and longer-term needs (Institute of Education Sciences, 2008).

■ *Make long-term, systematic efforts to engage students in the academic curriculum.* Students are more likely to stay in school and more likely to learn and achieve at high levels if they think their classes are worth their time and effort (e.g., L. W. Anderson & Pellicer, 1998; Institute of Education Sciences, 2008; S. M. Miller, 2003; Ramey & Ramey, 1998; Suh et al., 2007). The Into the Classroom feature “Engaging Students at Risk in the Academic Curriculum” offers several concrete examples of what we might do.

■ *Encourage and facilitate identification with school.* Students are far more likely to stay in school if they have an emotional attachment to their school and believe that they’re important members of the school community (Christenson & Thurlow, 2004; Fredricks, Blumenfeld, & Paris, 2004). Following are several strategies that researchers have found to be effective:

Chapter 13 offers many strategies for creating warm, emotionally supportive schools and classrooms.



## Into The Classroom

### Engaging Students at Risk in the Academic Curriculum

■ **Pique students’ interest with stimulating activities.**

In a unit on the physics of sound, a middle school science teacher shows students how basic principles of sound reveal themselves in popular music. On one occasion the teacher brings in a guitar and explains why holding down a string at different points along the neck of the guitar creates different frequencies and thus different notes.

■ **Make the curriculum relevant to students’ lives and needs—for example, through service learning activities.**

A math teacher at an inner-city middle school consistently encourages her students to identify and work to solve problems in their community. One of her classes expresses concern about the many liquor stores located near the school and the questionable customers and drug dealers the stores attract. The students use yardsticks and maps to calculate the distance of each store from the school, gather information about zoning restrictions and other city government regulations, identify potential violations, meet with a local newspaper editor (who publishes an editorial describing the situation), and eventually meet with state legislators and the city council. As a result of the students’ efforts, city police begin to monitor the liquor stores more closely, major violations are identified (leading to the closing of two stores), and the city council makes it illegal to consume alcohol within 600 feet of the school.

■ **Create a community of learners—a classroom in which students and teachers work collaboratively to increase everyone’s understanding.**

In a high school science class’s unit on weather, small groups of students specialize in different topics (e.g., humidity, wind, air

pressure). Each group conducts research about its topic in the library and on the Internet and then prepares a lesson to teach students in other groups what it has learned.

■ **Use students’ strengths to promote a positive sense of self.**

A low-income, inner-city elementary school forms a singing group (the Jazz Cats) for which students must try out. The group performs at a variety of community events, and the students enjoy considerable visibility for their talent. Group members exhibit increased self-esteem, improvement in other school subjects, and greater teamwork and leadership skills.

■ **Communicate high expectations for short-term and long-term academic success.**

A math teacher at a low-income, inner-city high school recruits students to participate in an intensive math program. The teacher and students work on evenings, Saturdays, and vacations, and all of them later pass the Advanced Placement calculus exam. (This real-life example is depicted in the 1988 film *Stand and Deliver*.)

■ **Provide extra support for academic success.**

A middle school homework program meets every day after school in Room 103, where students find their homework assignments on a shelf. Students follow a particular sequence of steps to do each assignment (assembling materials, having someone check their work, etc.) and use a checklist to make sure they don’t skip any steps. Initially, a supervising teacher closely monitors what they do, but with time and practice the students are able to complete their homework with only minimal help and guidance.

- Encourage participation in athletic programs, extracurricular activities, and student government. In some instances, this may mean providing extra supports to allow participation, such as assistance with transportation or supplementing the cost of a uniform. This strategy is especially important when students are having academic difficulties, because it provides an alternative way of experiencing school success.
- Involve students in school policy and management decisions.
- Give students positions of responsibility in managing school activities.
- Monitor students' attendance, and when students are persistently absent from school, discuss the absences with the student, and consult with others (e.g., school counselors) to intervene if necessary. (Eccles, 2007; Finn, 1989; Garibaldi, 1992; Newmann, 1981; M. G. Sanders, 1996)

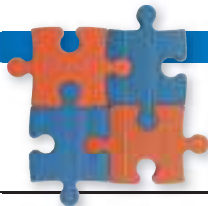
In general, then, the most effective programs for students at risk are those that would be ideal for *any* student.

#### MyEdLab Self-Check 4.4

**MyEdLab Application Exercise 4.5.** In this interactive exercise you can practice identifying ways to work with students who are at risk and help them experience academic and social success.



## 4



## What Have You Learned?

We now return to the chapter's learning outcomes and identify key points associated with each one. As we do so, we must remember three critical principles regarding the group differences described in this chapter: There is *considerable individual variability within any group, a great deal of overlap between any two groups, and additional variability across locations.*

- **4.1: Describe frequently observed between-group differences and within-group variability for various cultural and ethnic groups; also describe the teacher attitudes and strategies that underlie culturally responsive teaching.** Cultural and ethnic-group differences may be seen in language and dialect, talkativeness and verbal assertiveness, eye contact, personal space, responses to questions, comfort with public performance, views about teasing, attitudes toward cooperation and competition, use of technology, family relationships and expectations, conceptions of time, and worldviews. For students from cultural and ethnic minority groups, there is often some degree of cultural mismatch between the home and school environments, and teachers' misinterpretations of students' behaviors can exacerbate this mismatch. All students benefit when we promote increased understanding of cultural and ethnic differences and foster social interaction among students from diverse groups.
- **4.2: Describe the nature and origins of typical gender differences in school-age children and adolescents, and explain how you can best accommodate such differences in your classroom.** On average, males and females have similar

academic abilities but differ somewhat in physical activity levels, experiences with technology, motivation, sense of self, interpersonal relationships, classroom behavior, and career aspirations. Biological differences (e.g., gender-related hormone levels and subtle differences in brain development) account for a few gender differences, but socialization (which can amplify small biology-based differences) is probably at the root of many others. As teachers, we may occasionally need to tailor instructional strategies to the unique characteristics of boys versus girls; in general, however, we should hold equally high expectations for both sexes and make sure that both have equal opportunities to develop in all areas of the school curriculum.

- **4.3: Identify challenges that students from low-income families often face; also identify several strategies through which you can foster their resilience and help them be successful at school.** Numerous factors can contribute to the generally lower achievement of students from low-income families, including poor nutrition and housing, unhealthy physical and social environments, emotional stress, lower-quality schools, gaps in basic knowledge and skills, and homelessness. Despite such challenges, many children from low-income backgrounds have a positive sense of self and do well in school; such *resilient students* often have one or more individuals in their lives whom they trust and can turn to in difficult times. As teachers, we can help students in lower socioeconomic groups succeed in the classroom by building on their many strengths and providing the academic and emotional support they may sometimes need to overcome their adverse circumstances.

■ **4.4: Explain how you might recognize students who are at risk for academic failure and dropping out of school, and identify strategies for helping these students get on the path to academic and social success.** *Students at risk* are those with a high probability of failing to acquire the minimum academic skills necessary for success in the adult world; they may graduate from high school without having learned to read

or write, or they may drop out before graduation. To help such students succeed at school, we should identify them as early as possible, make the curriculum relevant to their needs and interests, communicate high expectations for academic success, assign an advocate to work specifically with each student when possible, provide sufficient support to make such success possible, and encourage involvement in school activities.



## Practice for Your Licensure Exam

### New Beginnings

Lila and her parents recently relocated from a South Asian country to a multicultural Middle Eastern country. Lila was forced to join a new school halfway through the sixth grade. She had never traveled outside her home country before this.

Lila found the classroom environment strange. She had never studied in a mixed-gender class before. Everyone in class used idioms, grammatical constructions, and pronunciations that Lila was not used to. The class material covered several concepts that were completely new. Her fellow students, especially the boys, seemed very assertive. Some of them tried making small talk with Lila, but others made fun of her accent. Lila would often appear withdrawn and would fail to respond to questions or submit any assignments. Occasionally, she would be found weeping.

Ms. Hana, the class teacher, found Lila's behavior confusing. Her class was known to be the friendliest and highest achieving of them all, so she found it unusual that one of her students was not settling in emotionally and academically. Concerned about Lila's adjustment, Ms. Hana decided to have a one-on-one meeting with her.

#### 1. Constructed-response question:

As a teacher, Ms. Hana feels that it is her duty to make the classroom as inclusive as possible. Which aspects of creating culturally inclusive environments and promoting gender equity should she keep in mind, and thus focus the meeting on, while speaking to Lila?

#### 2. Constructed-response question:

Which factors in the current classroom environment, at home, and everywhere else would contribute to Lila being subjected to a stereotype threat?

#### 3. Multiple-choice question:

Why do you think Lila was having trouble understanding English in the new environment even though she was exposed to it prior to her relocation?

- She was acculturating to the new environment.
- Her teachers and classmates spoke in Standard English used at school.
- Her classmates spoke a different dialect of Asian English.
- Her classmates were verbally assertive while she was quiet.

MyEdLab Licensure Exam 4.1

**PRAXIS** Go to Appendix C, "Matching Book Content to the Praxis Principles of Learning and Teaching Tests," to discover sections of this chapter that may be especially applicable to the Praxis tests.



Fotosearch/Glow Images

# 5

## Individual Differences and Special Educational Needs

### Learning Outcomes



- 5.1** Describe various perspectives on the nature of intelligence, and identify several ways in which you can nurture intelligence in your own students.
- 5.2** Explain how students' cognitive styles and dispositions might influence their classroom performance.
- 5.3** Identify implications of the U.S. Individuals with Disabilities Education Act (IDEA) for your own work as a teacher.
- 5.4** Explain how you might adapt your instruction and classroom practices to the unique strengths and limitations of students with various disabilities.
- 5.5** Explain how you might nurture the development of students who show exceptional gifts and talents.

## CASE STUDY: TIM

In elementary school, Tim earned reasonable grades despite poor reading comprehension skills. Although he often appeared to be in a daze during classroom activities, he was generally well behaved. In middle school his grades began to decline, and teachers complained of his spaciness and tendency to daydream. He had trouble staying on task in class and was so disorganized that he seldom completed homework. When Tim reached high school, he seemed unable to cope with the independence his teachers expected of students, and so he failed several 9th- and 10th-grade classes.

Now, as a 17-year-old 11th grader, Tim undergoes an in-depth psychological evaluation at a university diagnostic clinic. An intelligence test yields a score of 96, reflecting average ability, and measures of social and emotional adjustment are also within an average range. However, measures of attention consistently show this to be an area of weakness. Tim explains that he has trouble ignoring distractions and must find a very quiet place to do his schoolwork. Even then, he says, he often has to reread something several times to grasp its meaning. (Based on Hathaway, Dooling-Litfin, & Edwards, 2006, pp. 410–412)

- Tim’s attention problems have obviously been interfering with his academic achievement. But if you look closely at the facts presented in the case, you might realize that Tim also has strengths on which teachers can build. What particular characteristics might be working in Tim’s favor?
- As a teacher, how might you adapt your instructional strategies and classroom environment to accommodate Tim’s unique needs?



The clinic evaluation team eventually concludes that Tim has attention-deficit hyperactivity disorder, or ADHD. (Like Tim, some students identified as having ADHD exhibit attention problems *without* hyperactivity.) The team suspects that a learning disability might be at the root of the problem but doesn’t have sufficiently precise diagnostic techniques to determine this with certainty. On the plus side, Tim is certainly motivated to do well in school: He’s well behaved in class, seeks out quiet places to study, and may read something several times in an effort to make sense of it. With appropriately modified instruction and settings—for example, teaching Tim basic organizational skills, breaking a single complex task into several shorter and simpler ones, and giving him a quiet place to read and study—Tim can more readily stay on task and complete assignments (Barkley, 2006; Meltzer, 2007).

Teachers have many diverse responsibilities, and meeting the needs of students like Tim may make prospective teachers feel somewhat anxious. As we will see, students show significant **individual differences** in cognitive abilities, personalities, physical skills, and so on. In this chapter we’ll look at individual differences in intelligence, cognitive styles, and dispositions. We’ll then consider *students with special needs*—students who, like Tim, are different enough from their peers that they require specially adapted curriculum materials, instructional practices, or both. As we go along, we’ll find that the most effective instruction tends to be **differentiated instruction**—instruction that is tailored to align with each student’s current knowledge, skills, and needs.

## Intelligence

It is common for teachers, parents, and others to be involved in conversations about students’ intelligence, and many of us use that term often. However, there are a variety of ways to talk about intelligence. As teachers, we need to be aware that this is a complex

## CHAPTER OUTLINE

### Intelligence

- Theoretical Perspectives of Intelligence
- Measuring Intelligence
- Nature and Nurture in the Development of Intelligence
- Cultural and Ethnic Diversity in Intelligence
- Being Smart About Intelligence and IQ Scores

### Cognitive Styles and Dispositions

- Do Students Have Distinct Learning Styles?
- Does It Make Sense to Teach to Students’ “Right Brains” or “Left Brains”?
- Analytic and Holistic Thinking

### Educating Students with Special Needs in General Education Classrooms

- Public Law 94-142: Individuals with Disabilities Education Act (IDEA)
- Potential Benefits and Drawbacks of Inclusion
- Identifying Students’ Special Needs: Response to Intervention and People-First Language

### Students with Specific Cognitive or Academic Difficulties

- Learning Disabilities
- Attention-Deficit Hyperactivity Disorder (ADHD)
- Speech and Communication Disorders
- General Recommendations

### Students with Social or Behavioral Problems

- Emotional and Behavioral Disorders
- Autism Spectrum Disorders
- General Recommendations

### Students with General Delays in Cognitive and Social Functioning

- Intellectual Disabilities

### Students with Physical or Sensory Challenges

- Physical and Health Impairments
- Visual Impairments
- Hearing Loss
- General Recommendations

### Students with Advanced Cognitive Development

- Giftedness

### Considering Diversity When Identifying and Addressing Special Needs

### General Recommendations for Working with Students Who Have Special Needs

topic. As we will discuss, measures of intelligence can be very useful, but overinterpretation of these scores can sometimes be harmful to our students. Theorists define and conceptualize *intelligence* in a variety of ways, but most agree that it has several distinctive qualities:

- It is *adaptive*: It can be used flexibly to respond to a variety of situations and problems.
- It is related to *learning ability*: People who are intelligent in particular domains learn new information and skills in those domains more quickly and easily than people who are less intelligent in those domains.
- It involves the *use of prior knowledge* to analyze and understand new situations effectively.
- It involves the complex interaction and coordination of *many different mental processes*.
- It is *culture specific*. What is considered to be intelligent behavior in one culture isn't necessarily intelligent behavior in another culture. (Dai, 2010; Laboratory of Comparative Human Cognition, 1982; J. Li, 2004; Neisser et al., 1996; Saklofske, van de Vijver, Oakland, Mpofu, & Suzuki, 2015; Sternberg, 1997, 2004, 2007; Sternberg & Detterman, 1986)

With these qualities in mind, we offer an intentionally broad definition of **intelligence**: the ability to apply prior knowledge and experiences flexibly to accomplish challenging new tasks.

For most theorists intelligence is somewhat different from what a person has actually learned (e.g., as reflected in school achievement). At the same time, intelligent thinking and behavior *depend* on prior learning. Intelligence, then, isn't necessarily a permanent, unchanging characteristic; it can be modified through experience and learning.

## THEORETICAL PERSPECTIVES OF INTELLIGENCE

Some psychologists have suggested that intelligence is a single, general ability that people have to varying degrees and apply in a wide range of activities. Others have disagreed, citing evidence that people can be more or less intelligent on different kinds of tasks, at different points in development, and in different contexts. The theories of intelligence we examine in this section reflect these diverse perspectives on the nature of intelligence.

### SPEARMAN'S CONCEPT OF *g*

Imagine that you give a large group of students a wide variety of tests—some measuring verbal skills, others measuring visual–spatial thinking, still others measuring mathematical problem solving, and so on. Chances are that the test scores would all correlate with one another to some degree: Students who score high on one test would tend to score high on the other tests as well. The correlations would be strong among tests of very similar abilities; those among tests of distinctly different abilities would be weaker. For example, a student who scored very high on a vocabulary test would probably score high on other measures of verbal ability but might have only modest success in solving math problems (McGrew, Flanagan, Zeith, & Vanderwood, 1997; Neisser et al., 1996; Spearman, 1904).

Charles Spearman (1904, 1927) drew on such findings to propose that intelligence comprises both (1) a single, pervasive reasoning ability (a *general factor*) that is used across the board and (2) a number of more specific abilities, such as problem-solving ability and abstract reasoning (*specific factors*). The general factor and any relevant specific factors work together during the execution of particular tasks.

Many contemporary psychologists believe that sufficient evidence supports Spearman's concept of a general factor in intelligence—often known simply as Spearman's ***g***. Underlying it, they suspect, may be a general ability to process information quickly and efficiently (Bornstein et al., 2006; Coyle, Pillow, Snyder, & Kochunov, 2011; Haier, 2003). A general ability to control and direct one's thinking may also be involved (Cornoldi, 2010; H. L. Swanson, 2008).

### CATTELL'S FLUID AND CRYSTALLIZED INTELLIGENCES

Several decades after Spearman's groundbreaking work, Raymond Cattell (1963, 1987) found evidence for two distinctly different components of general intelligence (*g*). First, people differ in **fluid intelligence**, their ability to acquire knowledge quickly, use abstract reasoning abilities, and adapt to new situations effectively. Second, they differ in **crystallized intelligence**, the knowledge and skills they've accumulated from their experiences, schooling, and culture. Fluid intelligence

As we consider the roles of the central executive and metacognition in Chapter 6 and Chapter 7, respectively, we'll look more closely at how people can control and direct their own thought processes.

is more important for new, unfamiliar tasks, especially those that require rapid decision making and involve nonverbal content. Crystallized intelligence is more important for familiar tasks, especially those that depend heavily on language and prior knowledge. Cattell suggested that fluid intelligence is largely the result of inherited biological factors, whereas crystallized intelligence depends on both fluid intelligence and experience and thus is influenced by both heredity and environment.

## EXPERIENCING FIRSTHAND

### CRYSTALLIZED AND FLUID INTELLIGENCE

Consider the following two questions (Roberts & Lipnevich, 2012):

1. What is the next number in this sequence: 1 2 1 4 1 6 1 8?
2. What is the meaning of the word *peripatetic*?

One of these questions assesses fluid intelligence, whereas the other assesses crystallized intelligence. Can you tell which is which? Question 1 assesses fluid intelligence; a student has to reason abstractly to figure out the next number in the sequence; in contrast, question 2 represents crystallized intelligence, because knowledge of the meaning of the word *peripatetic* is something that a student would have learned—the answer could not be determined through any form of reasoning.<sup>1</sup> Both of these types of intelligence are important and valuable, but as you can see, they are also quite different.

### CATTELL–HORN–CARROLL THEORY OF COGNITIVE ABILITIES

Some theorists have built on Cattell's distinction to suggest that intelligence may have three layers, or *strata* (Ackerman & Lohman, 2006; Carroll, 1993, 2003; D. P. Flanagan & Ortiz, 2001; Horn, 2008). In this *Cattell–Horn–Carroll theory of cognitive abilities*, the top stratum is general intelligence, or *g*. Underlying it in the middle stratum are 9 or 10 more specific abilities (including crystallized and fluid intelligence)—processing speed, general reasoning ability, general world knowledge, ability to process visual input, and so on—that encompass fluid and/or crystallized intelligence to varying degrees. And underlying *these* abilities in the bottom stratum are more than 70 very specific abilities, such as reading speed, mechanical knowledge, and number and richness of associations in memory. The Cattell–Horn–Carroll theory is the most researched and most widely accepted theory of intelligence among individuals who work with school-aged children and adolescents, and many of the IQ assessments currently in use are based on this theory (Kyllonen, 2015). The Cattell–Horn–Carroll theory is too complex to describe in detail here, but you should be aware that psychologists are increasingly finding it useful in predicting and understanding students' achievement in various content domains (e.g., J. J. Evans, Floyd, McGrew, & Leforgee, 2001; Phelps, McGrew, Knopik, & Ford, 2005; B. E. Proctor, Floyd, & Shaver, 2005; Proctor, 2012).

### GARDNER'S MULTIPLE INTELLIGENCES

Howard Gardner (1983, 1999, 2011; Gardner & Hatch, 1990) suggests that people have at least eight distinctly different abilities, or *multiple intelligences*, that are relatively independent of one another (see Table 5.1). In his view there may also be a ninth (existential) intelligence dedicated to philosophical and spiritual issues (e.g., Who are we? Why do we die?). However, because evidence for it is weaker than that for the other intelligences (Gardner, 1999, 2000a, 2003), we have omitted it from the table.

Gardner presents some evidence to support the existence of these distinctly different intelligences. For instance, he describes people who are quite skilled in one area, perhaps in composing music, yet have seemingly average



Keep in mind that different students are likely to be intelligent in different ways.



Attention to detail in 10-year-old Luther's drawing of a plant suggests some talent in what Gardner calls *naturalist* intelligence.

<sup>1</sup>The next numbers in the sequence would be 1 and 10; *peripatetic* means roaming or traveling (when used as an adjective) and a person who roams or travels (when used as a noun).

TABLE 5.1 • Gardner's Multiple Intelligences

TYPE OF INTELLIGENCE	EXAMPLES OF RELEVANT BEHAVIORS
<b>Linguistic intelligence:</b> Ability to use language effectively	<ul style="list-style-type: none"> <li>• Making persuasive arguments</li> <li>• Writing poetry or contributing to a blog</li> <li>• Noticing subtle nuances in meanings of words</li> </ul>
<b>Logical–mathematical intelligence:</b> Ability to reason logically, especially in mathematics and science	<ul style="list-style-type: none"> <li>• Solving mathematical problems quickly</li> <li>• Generating mathematical proofs</li> <li>• Formulating and testing hypotheses about observed phenomena<sup>a</sup></li> </ul>
<b>Spatial intelligence:</b> Ability to notice details of what one sees and to imagine and manipulate visual objects in one's mind	<ul style="list-style-type: none"> <li>• Creating mental images</li> <li>• Manipulating mental images</li> <li>• Drawing a visual likeness of an object</li> <li>• Seeing subtle differences among visually similar objects</li> </ul>
<b>Musical intelligence:</b> Ability to create, comprehend, and appreciate music	<ul style="list-style-type: none"> <li>• Playing a musical instrument</li> <li>• Composing a musical work</li> <li>• Identifying the underlying structure of music</li> </ul>
<b>Bodily–kinesthetic intelligence:</b> Ability to use one's body skillfully	<ul style="list-style-type: none"> <li>• Dancing</li> <li>• Playing basketball</li> <li>• Performing pantomime</li> </ul>
<b>Interpersonal intelligence:</b> Ability to notice subtle aspects of other people's behaviors	<ul style="list-style-type: none"> <li>• Reading other people's moods</li> <li>• Detecting other people's underlying intentions and desires</li> <li>• Using knowledge of others to influence their thoughts and behaviors</li> </ul>
<b>Intrapersonal intelligence:</b> Awareness of one's own feelings, motives, and desires	<ul style="list-style-type: none"> <li>• Identifying the motives guiding one's own behavior</li> <li>• Using self-knowledge to relate more effectively with others</li> </ul>
<b>Naturalist intelligence</b> Ability to recognize patterns in nature and differences among various life-forms and natural objects	<ul style="list-style-type: none"> <li>• Identifying members of particular plant or animal species</li> <li>• Classifying natural forms (e.g., rocks, types of mountains)</li> <li>• Applying one's knowledge of nature in such activities as farming, landscaping, or animal training</li> </ul>

<sup>a</sup>This example may remind you of Piaget's theory of cognitive development. Many of the stage-specific characteristics that Piaget described reflect logical–mathematical intelligence.  
Sources: Gardner, 1983, 1999.

abilities in other areas. He also points out that people who suffer brain damage sometimes lose abilities that are restricted primarily to one intelligence. One person might show deficits primarily in language, whereas another might have difficulty with tasks that require spatial reasoning.

Among psychologists, reviews of Gardner's theory are mixed (Roberts & Lipnevich, 2012). Some theorists don't believe that Gardner's evidence is sufficiently compelling to support the notion of eight or nine distinctly different abilities (N. Brody, 1992; Corno et al., 2002; Sternberg, 2003; Waterhouse, 2006). Others agree that people may have a variety of relatively independent abilities but argue for different distinctions than those Gardner makes (e.g., note the second-stratum abilities in the Cattell–Horn–Carroll theory just described). Still others reject the idea that abilities in certain domains, such as in music or bodily movement, are really “intelligences” per se (Bracken, McCallum, & Shaughnessy, 1999; Sattler, 2001).

Despite researchers' lukewarm reception of Gardner's theory, many educators have wholeheartedly embraced it because of its optimistic view of human potential. Gardner's perspective encourages us to use many different teaching methods so that we can capitalize on students' diverse talents to help them learn and understand classroom subject matter (L. Campbell, Campbell, & Dickinson, 1998; Gardner, 2000b; Kornhaber, Fierros, & Veenema, 2004).

Whether or not human beings have eight or more distinctly different intelligences, they certainly benefit when they're encouraged to think about a particular topic in two or more distinctly different ways—perhaps using both words and mental images (R. E. Mayer, 2011b; Moreno, 2006). We won't always want to teach to students' strengths, however. We must also give students tasks that encourage them to address and thereby strengthen their areas of weakness (Sternberg, 2002).

### STERNBERG'S THEORY OF SUCCESSFUL INTELLIGENCE

Robert Sternberg (e.g., 1998, 2004, 2012; Sternberg et al., 2000) has speculated that people may be more or less intelligent in three different domains. His Triarchic Theory of Intelligence (also sometimes referred to as the *Theory of Successful Intelligence*) focuses on how our skills and abilities



Present classroom subject matter using a variety of approaches to capitalize on students' diverse abilities, but also give them tasks that require them to work on areas of weakness.



in these domains help us to achieve our short-term and long-term goals. *Analytical intelligence* involves making sense of, analyzing, contrasting, and evaluating the kinds of information and problems often seen in academic settings and on intelligence tests. *Creative intelligence* involves imagination, invention, and synthesis of ideas within the context of new situations. *Practical intelligence* involves applying knowledge and skills effectively to manage and respond to everyday problems and social situations. Sternberg has argued that traditional views of intelligence have focused too narrowly on academic success, and have neglected the role of intelligence in our everyday lives.

In addition, Sternberg proposes that intelligent behavior involves an interplay of three factors, all of which vary from one occasion to the next (Sternberg, 1985, 1997, 2003):

- *The environmental context in which the behavior occurs.* Different behaviors may be more or less adaptive and effective in different cultures. For example, learning to read is an adaptive response in industrialized societies yet largely irrelevant to certain other cultures.
- *The relevance of prior experiences to a particular task.* Prior experiences can enhance intelligence in either of two ways. In some cases extensive practice with a particular kind of task enables students to perform that task with increasing speed and efficiency—that is, with greater *automaticity*. For example, as children get more practice multiplying double-digit numbers (e.g.,  $32 \times 55$ ), their speed and efficiency at solving such problems increases. In other instances, students are able to draw on what they've learned in previous situations to help them with *new* tasks. For example, students may apply algebraic principles learned in math classes to problems in physical science.
- *The cognitive processes required by the task.* Numerous cognitive processes are involved in intelligent behavior: separating important information from irrelevant details, identifying possible problem-solving strategies, seeing relationships among seemingly different ideas, and so on. Different cognitive processes may be more or less important in different contexts, and an individual may behave more or less intelligently depending on the specific cognitive processes needed at the time.

There is some evidence that the three components of the theory of successful intelligence can be measured, and that assessments in these domains are related to important educational outcomes (Sternberg, 2010; Sternberg et al., 2014). In addition, recent research from the field of neuroscience suggests that similar processes are involved in creative and intellectual thinking (Silvia, 2015; Sternberg, 2003). However, empirical research supporting these three components is limited at this time (Roberts & Lipnevich, 2012). Nevertheless, the theory reminds us that students' ability to behave intelligently may vary considerably depending on the cultural context, previously learned knowledge and skills, and the cognitive processes that a task involves.

## DEVELOPMENTAL VIEWS OF INTELLIGENCE

Theories of cognitive development portray children as becoming increasingly intelligent over time; for example, with age and experience children gain greater proficiency in abstract thinking (Jean Piaget's theory) and effective use of complex cultural tools (Lev Vygotsky's theory). Yet with the possible exception of Sternberg's triarchic theory—which points out the importance of prior experiences—the perspectives of intelligence described so far don't really consider how intelligence might take different forms at different points in development (Dai, 2010).

Some psychologists working in the area of giftedness suggest that not only is intelligence somewhat specific to particular domains but also that its basic nature changes with age and experience. From this perspective, the developmental course of exceptional abilities and talents is as follows:

1. Initially (typically in childhood), people show exceptional *potential* in a certain domain, perhaps in reading, math, or music.
2. With appropriate instruction, guidance, and practice opportunities, people show exceptional *achievement* in the domain.
3. If people continue to pursue the domain and practice domain-specific tasks over a lengthy time period (typically into adulthood), they may eventually gain considerable *expertise and eminence*, to the point that their accomplishments are widely recognized (Dai, 2010; Subotnik, Olszewski-Kubilius, & Worrell, 2011).

Chapter 6 looks more closely at automaticity.

Chapter 2 describes Piaget's and Vygotsky's theories of development.

In addition, increases in more general cognitive abilities are related to experiences such as school attendance, work experiences, and other life events (Kyllonen, 2015). Here, then, we see a very dynamic view of intelligence: Although its roots may be in certain natural endowments, over the long run intelligence requires both environmental nurturance and personal perseverance (Dai, 2010; Subotnik et al., 2011)

### DISTRIBUTED INTELLIGENCE

Many psychologists are beginning to realize that not only does a supportive environmental context enhance people's intelligence over time, but in fact it can facilitate intelligent behavior in the here and now. People are far more likely to think and behave intelligently when they have assistance from their physical, cultural, and social environments—an idea that is sometimes called **distributed intelligence** (e.g., Hutchins, 1995; Pea, 1993; Perkins, 1995). People can “distribute” a challenging task—that is, they can pass some of the cognitive burden onto something or someone else—in at least three ways. First, they can use physical objects, especially technology (e.g., tablets, calculators, computers), to handle and manipulate large amounts of information. In particular, having a smartphone available virtually at any time and in any place affords students the opportunity to access information and various tools. Second, they can represent and think about the situations they encounter by using their culture's various symbolic systems—words, charts, diagrams, and so on—and other cognitive tools. And third, they can work with other people to explore ideas and solve problems—as we've often heard, two heads are (usually) better than one. In fact, when students work together on complex, challenging tasks and problems, they teach one another strategies and ways of thinking that can help each of them think even *more* intelligently on future occasions (Kuhn, 2001b; Palincsar & Herrenkohl, 1999; Slavin, 2011).

From a distributed-intelligence perspective, then, intelligence is a highly variable, context-specific ability that increases when appropriate environmental supports are available. It certainly isn't an immutable trait that learners “carry around” with them, nor is it something that can be easily measured and then summarized with one or more test scores. However, psychologists coming from other theoretical perspectives often *do* try to measure intelligence, as we'll see now.

### MEASURING INTELLIGENCE

When a student consistently struggles with certain aspects of the school curriculum, as Tim does in the opening case study, psychologists sometimes find it helpful to get a measure of the student's general level of cognitive functioning. Such measures are commonly known as **intelligence tests**. To get a sense of what intelligence tests are like, try the following exercise.

### EXPERIENCING FIRSTHAND

#### MOCK INTELLIGENCE TEST

Answer each of these questions:

1. What does the word *penitence* mean?
2. How are a goat and a beetle alike?
3. What should you do if you get separated from your family in a large department store?
4. What do people mean when they say, “A rolling stone gathers no moss”?

5. Complete the following analogy:  $\blacktriangle$  is to  $\triangle$  as  $\bigcirc$  is to:

- a.  $\bullet\bullet$       b.  $\bullet\bigcirc$       c.  $\bigcirc$       d.  $\blacktriangleleft$

These test items are modeled after items on many contemporary intelligence tests. Often the tests include a mixture of verbal tasks (such as items 1 through 4) and less verbal, more visual tasks (such as item 5).

Scores on intelligence tests were originally calculated using a formula that involves division. Hence, they were called intelligence quotient scores, or **IQ scores**. Although we still use the term IQ, intelligence test scores are no longer based on the old formula. Instead, they're

Identify physical, symbolic, and social supports that can help students think more intelligently.



MyEdLab

#### Video Example 5.1.

Children can think and behave more intelligently when they acquire the cognitive tools of their culture, such as strategies for organizing and graphing data.

determined by comparing a student's performance on a given test with the performance of others in the same age-group. This is a very important point—an IQ score is reflective of a student's cognitive abilities at a particular age, compared to students of the same age. A score of 100 indicates average performance on the test: Students with this score have performed better than half of their age-mates but not as well as the other half. Scores well below 100 indicate below-average performance on the test; scores well above 100 indicate above-average performance.

Figure 5.1 shows the percentages of students getting scores at different points along the scale (e.g., 12.9% get scores between 100 and 105). Notice that the curve is high in the middle and low at both ends, indicating that scores close to 100 are far more common than scores considerably higher or lower than 100. For example, if we add up the percentages in different parts of Figure 5.1, we find that approximately two-thirds (68%) of students score within 15 points of 100 (i.e., between 85 and 115). In contrast, only 2% of students score as low as 70, and only 2% score as high as 130. Such a many-in-the-middle-and-few-at-the-extremes distribution of scores seems to characterize a wide variety of human characteristics. Hence, psychologists have created a method of scoring intelligence test performance that intentionally yields this distribution.

In the opening case study, Tim's performance on an intelligence test yields an IQ score of 96, which we can now make some sense of. As you can see in Figure 5.1, a score of 96 is so close to 100 that we should consider it to be well within an average range.

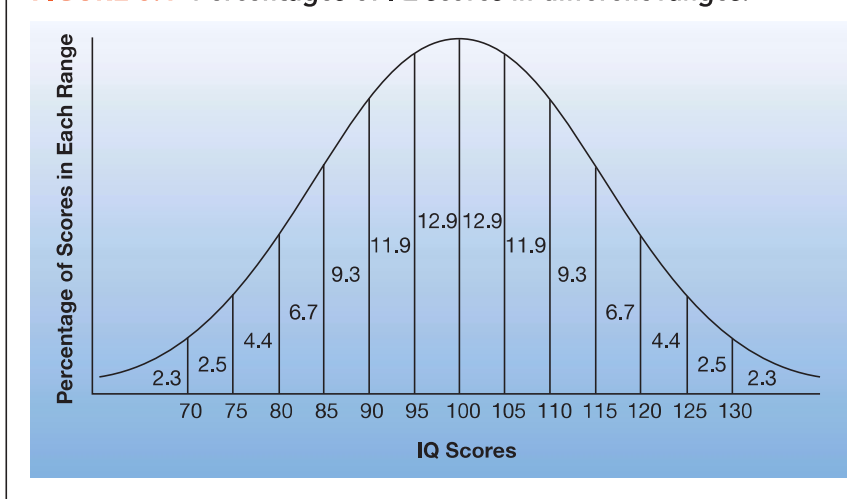
Researchers are still studying intelligence and designing new assessments of intelligence. It has become particularly apparent in recent years that other noncognitive variables (e.g., motivation and persistence) are related to intelligence. In addition, new techniques are being developed to account for the fact that some individuals work quickly through assessments (and thus may complete more of the assessment, but may commit more errors because of going quickly), whereas other test takers are more slow and deliberate, and may achieve greater levels of accuracy, but not complete as many items (van der Linden, 2007).

## IQ SCORES AND SCHOOL ACHIEVEMENT

Studies repeatedly show that performance on intelligence tests is correlated with school achievement. On average, children with higher IQ scores earn higher course grades, do better on standardized achievement tests, and complete more years of education (N. Brody, 1997; Duckworth, Quinn, & Tsukayama, 2012; Sattler, 2001). Data suggest that these tests are predictive of success in higher education as well (Kuncel & Hezlett, 2007).

It's important to keep three points in mind about this IQ–achievement relationship. First, intelligence doesn't necessarily *cause* achievement; it is simply correlated with it. Even though students with high IQs typically perform well in school, we cannot conclusively say that their high achievement is actually the result of their intelligence. Intelligence probably does play an important role in school achievement, but so, too, do many other factors—motivation, quality of instruction, family and neighborhood resources, peer-group expectations, and so on. Second, the relationship between IQ scores and achievement is an imperfect one, with many exceptions to the rule. For a variety of reasons, some students with high IQ scores don't perform well in the classroom, and others achieve at higher levels than we would predict from their IQ scores alone. For example, recent research suggests that the relation between intelligence and achievement is affected by sleep—when students do not get enough sleep on any given night, intelligence and achievement aren't as closely correlated as they might otherwise be (Erath, Tu, Buckhalt, & El-Sheikh, 2015). Third and most important, we must remember that an IQ score simply reflects a

**FIGURE 5.1** Percentages of IQ scores in different ranges.



If you have taken a course in descriptive statistics, you may realize that IQ scores are *standard scores* based on the *normal distribution*. Chapter 15 explains these concepts.



Don't use students' IQ scores to make long-term predictions about school achievement.

child's performance on a particular test at a particular time—it's *not* a permanent characteristic etched in stone—and that some change is to be expected over time.

## NATURE AND NURTURE IN THE DEVELOPMENT OF INTELLIGENCE

Research tells us that heredity probably plays some role in intelligence. For instance, identical twins tend to have more similar IQ scores than nonidentical (fraternal) twins do, even when the twins are adopted at birth by different parents and grow up in different homes. This is *not* to say, however, that children inherit a single IQ gene that determines their intellectual ability. Rather, they probably inherit a variety of characteristics that in one way or another affect particular cognitive abilities and talents (O. S. P. Davis, Haworth, & Plomin, 2009; Horn, 2008; Kan, Wicherts, Dolan, & van der Maas, 2013; Kovas & Plomin, 2007).

Environmental factors influence intelligence as well, sometimes for the better and sometimes for the worse. Poor nutrition in the early years of development (including the 9 months before birth) leads to lower IQ scores, as does a mother's excessive use of alcohol during pregnancy (Neisser et al., 1996; Ricciuti, 1993; Sigman & Whaley, 1998). Moving a child from a neglectful, impoverished home environment to a more nurturing, stimulating one (e.g., through adoption) can result in IQ gains of 15 points or more (Beckett et al., 2006; Capron & Duyme, 1989; van IJzendoorn & Juffer, 2005). Effective, too, are long-term intervention programs designed to help children acquire basic cognitive and academic skills (e.g., F. A. Campbell & Burchinal, 2008; Kağitçibaşı, 2007). Even simply *going to school* has a positive effect on IQ scores (Ceci, 2003; Ramey, 1992), and attending an academically rigorous school may be particularly related to gains in intelligence, even during adolescence (Becker, Lüdtke, Trautwein, Köller, & Baumert, 2012). Furthermore, worldwide, there has been a slow but steady increase in people's performance on intelligence tests—a trend that is probably due to better nutrition, smaller family sizes, better schooling, increasing cognitive stimulation (through increased access to technology, reading materials, etc.), and other improvements in people's environments (Flynn, 2007; E. Hunt, 2008; Neisser, 1998).

The question of how *much* nature and nurture each play a role in influencing intelligence has been a source of considerable controversy over the years. But in fact, genetic and environmental factors interact in their influences on cognitive development and intelligence in ways that can probably never be disentangled. First of all, genes require reasonable environmental support to do their work. In an extremely impoverished environment—one with a lack of adequate nutrition and stimulation—heredity may have little to say about children's intellectual growth, but under better circumstances it can have a significant influence (Ceci, 2003; D. C. Rowe, Jacobson, & Van den Oord, 1999; Turkheimer, Haley, Waldron, D'Onofrio, & Gottesman, 2003). Second, heredity seems to affect how susceptible or impervious a child is to particular environmental conditions (Rutter, 1997). For instance, some students—such as those with certain inherited disabilities, like Tim in the opening case study—may need a quiet, well-structured learning environment in which to acquire good reading comprehension skills, but other students might pick up good reading skills regardless of the quality of their environment. Third, children tend to seek out environmental conditions that match their inherited abilities (O. S. P. Davis et al., 2009; W. Johnson, 2010; Scarr & McCartney, 1983). For example, children who inherit exceptional quantitative reasoning ability may enroll in advanced math courses and in other ways nurture their inherited talent. Children with average quantitative ability are less likely to take on such challenges and thus have fewer opportunities to develop their mathematical skills.

## INTELLIGENCE AND THE BRAIN

Intelligence—at least that aspect of intelligence that can be measured by IQ tests—does seem to have some basis in the brain (Karama et al., 2011). A high level of intelligence also seems to involve ongoing, efficient interactions among numerous brain regions (Jung & Haier, 2007). Research conducted by neuroscientists suggests that numerous components of intelligence are related to the brain and its development, including basic cognitive skills in young children, memory, attention, reading, and mathematics ability (Byrnes, 2012). Although heredity appears to play some role in these differences, the extent to which they are the result of nature, nurture, or a nature–nurture interaction remains to be seen (Jung & Haier, 2007). And in any case, we must

See Chapter 2 for more information on the structure, development, and plasticity of the human brain.

remember that the human brain has considerable ability to restructure itself—that is, it has *plasticity*—throughout childhood and adulthood.

## CULTURAL AND ETHNIC DIVERSITY IN INTELLIGENCE

Historically, some ethnic groups in the United States have, *on average*, performed better than other ethnic groups on intelligence tests. Most experts agree that such group differences in IQ scores are probably due to differences in environment and, more specifically, to economic circumstances that affect the quality of prenatal and postnatal nutrition, availability of stimulating books and toys, access to educational opportunities, and so on (Brooks-Gunn, Klebanov, & Duncan, 1996; Byrnes, 2003; McLoyd, 1998). Furthermore, various groups have become increasingly *similar* in average IQ score in recent years—a trend that can be attributed only to more equitable environmental conditions (Dickens & Flynn, 2006; Neisser et al., 1996).

Yet it's important to note that different cultural groups have somewhat different views about what intelligence *is* and may therefore nurture somewhat different abilities in their children (Saklofske et al., 2015). Many people of European descent think of intelligence primarily as an ability that influences children's academic achievement and adults' professional success. In contrast, people in many African, Asian, Hispanic, and Native American cultures think of intelligence as involving social as well as academic skills—maintaining harmonious interpersonal relationships, working effectively together to accomplish challenging tasks, and so on (Greenfield et al., 2006; J. Li & Fischer, 2004; Sternberg, 2004, 2007). In Buddhist and Confucian societies in the Far East (e.g., China, Taiwan), intelligence also involves acquiring strong moral values and making meaningful contributions to society (J. Li, 2004; Sternberg, 2003).


Cultural groups differ, too, in the behaviors that they believe reflect intelligence. For example, many traditional measures of intelligence take speed into account on certain test items: Children score higher if they respond quickly as well as correctly. Yet people in some cultures tend to value thoroughness over speed and may be skeptical when tasks are completed very quickly (Sternberg, 2007). As another example, many people in mainstream Western culture interpret strong verbal skills as a sign of intelligence, but for many Japanese and many Inuit people of northern Quebec, talking a lot indicates immaturity or low intelligence (Crago, 1988; Minami & McCabe, 1996; Sternberg, 2003). One Inuit teacher had this concern about a boy whose language was quite advanced for his age-group:


Do you think he might have a learning problem? Some of these children who don't have such high intelligence have trouble stopping themselves. They don't know when to stop talking. (Crago, 1988, p. 219)

As teachers, then, we must be careful not to assume that our own views of intelligence are shared by the students and families of cultures very different from our own.

## BEING SMART ABOUT INTELLIGENCE AND IQ SCORES

Whatever its nature and origins may be, intelligence appears to be an important factor in students' ability to learn and achieve in the classroom. Accordingly, we must have a good grasp of how we can best nurture students' intellectual growth and how we can reasonably interpret their performance on intelligence tests and use that information wisely. Following are several recommendations.

 *Place higher priority on developing—rather than on determining—intelligence.* As we've seen, intelligence is hardly a fixed, unchangeable characteristic: Environmental factors, including schooling, can lead to increases in children's measured intelligence. And the notion of distributed intelligence suggests that virtually all students can act more intelligently when they have tools, symbolic systems, and social groups to assist them. As teachers, we should think more about *enhancing and supporting* students' intelligence than about measuring it (Dai, 2010; P. D. Nichols & Mittelholtz, 1997; Posner & Rothbart, 2007; B. Rhodes, 2008).

 *Think of intelligence tests as useful but imperfect measures.* Intelligence tests aren't magical instruments that mysteriously determine a learner's true intelligence—if, in fact, such a thing as



Assume that when children from diverse ethnic groups all have reasonably stimulating environments, they have equal potential to develop their intellectual abilities.



When meeting with students' parents, remember that those from diverse backgrounds may value different aspects of intelligence.

Young children's distractibility during a testing session decreases the *reliability* of any test scores obtained (see Chapter 14 and Chapter 15).



Be skeptical of any IQ scores obtained for recent immigrants and other students who were not fluent in English when tested. In general, never base expectations for students' achievement *solely* on IQ scores.




Don't use so-called "intelligence tests" you find posted on the Internet.


Chapter 14 provides more details about dynamic assessment.

"true" intelligence exists. Instead, these tests are simply collections of questions and tasks that psychologists have developed in order to get a handle on how well students can think, reason, and learn at a particular point in time. Used in conjunction with other information, they can often give us a general idea of a student's current cognitive functioning. To interpret IQ scores appropriately, however, we must be aware of their limitations:


- Different kinds of tests can yield somewhat different scores.
- A student's performance on any test will inevitably be affected by many temporary factors—general health, time of day, distracting circumstances, and so on. Such factors are especially influential for young children, who are apt to have high energy levels, short attention spans, and little interest in sitting still for more than a few minutes.
- Test items typically focus on certain skills that are important in mainstream Western culture—especially in school settings—and on tasks that can be accomplished within a single, short testing session. They don't necessarily tap into skills that are more highly valued and nurtured in other cultures, nor do they tap into skills that involve lengthy time periods (e.g., planning ahead, making wise decisions) or highly specific areas.
- Some students may be unfamiliar with the content or types of tasks involved in particular test items and may perform poorly on those items as a result.
- English language learners—students who have only limited proficiency in English as a result of growing up in a non-English-speaking environment—are at an obvious disadvantage when an intelligence test is administered in English. Thus, their IQ scores will typically be poor indicators of what they will be able to do once their English improves. (Dirks, 1982; Heath, 1989; Neisser et al., 1996; Olvera, & Gómez-Cerrillo, 2014; Perkins, 1995; Stanovich, 2009; Sternberg, 2007; Sternberg, Grigorenko, & Kidd, 2005)

Obviously, then, we must be skeptical of IQ scores obtained for students who come from diverse cultural backgrounds, know little English, or were fairly young at the time of assessment.

 *Use the results of more focused measures when you want to assess specific abilities.* Whenever we obtain and use IQ scores, we're buying into the idea that a general factor, or *g*, underlies students' school performance. But given the multifaceted nature of intelligence, no single test can possibly give us a complete picture of a student's abilities. If we want to estimate a student's potential for success in a particular domain—say, in mathematics—we're probably better off using measures of more specific abilities (Ackerman & Lohman, 2006; Horn, 2008; McGrew et al., 1997). However, we urge you to rely *only* on instruments available from well-respected test publishers. Tests you might find on the Internet—for instance, tests that claim to be measures of Gardner's multiple intelligences—have typically undergone little or no research scrutiny, making their results questionable at best. Keep in mind, too, that intelligence tests should be administered only by school psychologists and other professionals who have been specifically trained in their use.

 *Look for behaviors that reveal exceptional talents within the context of a student's culture.* For example, among students who have grown up in predominantly African American communities, intelligence might be reflected in oral language, such as colorful speech, creative storytelling, or humor. For students from Native American cultures, intelligence might be reflected in interpersonal skills, highly skilled craftsmanship, or an exceptional ability to notice and remember subtle landmarks in one's physical environment (Dai, 2010; Sternberg, 2005; Torrance, 1989).

As teachers, then, we must be careful not to limit our conception of intelligence only to students' ability to succeed at traditional academic tasks and to perform well on traditional intelligence tests. One alternative is *dynamic assessment*: Rather than assess what students already know and can do, we might teach them something new and see how quickly and easily they master it (Feuerstein, Feuerstein, & Falik, 2010; Haywood & Lidz, 2007; Sternberg, 2007).

 *Remember that many other factors also affect students' classroom achievement.* Most measures of intelligence focus on specific things that a student *can* do, with little consideration of

what a student is *likely* to do. For instance, intelligence tests don't evaluate the extent to which students are willing to view a situation from multiple perspectives, examine data with a critical eye, try hard even when faced with a difficult question, or actively take charge of their own learning. Yet such traits are often just as important as intellectual ability in determining success on academic and real-world tasks (Duckworth & Seligman, 2005; Kuhn, 2001a; Perkins, Tishman, Ritchhart, Donis, & Andrade, 2000). Even teachers' expectations for students can have small effects on students' intelligence test scores (Raudenbush, 1984). In the next section we'll examine forms that these *cognitive styles* and *dispositions* might take.

Chapter 11 discusses the relations between teacher expectations and student achievement.

#### MyEdLab Self-Check 5.1

**MyEdLab Application Exercise 5.1.** In this interactive exercise you can practice identifying ways in which teachers nurture intelligence in their diverse students.



## Cognitive Styles and Dispositions

Students with the same general level of intelligence often approach classroom tasks and think about classroom topics differently. Some of these individual differences reflect **cognitive styles**, over which students don't necessarily have much conscious control. Others reflect **dispositions**, which students voluntarily and intentionally bring to bear on their efforts to master school subject matter. Don't agonize over the distinction between the two concepts, because their meanings overlap considerably. Both involve not only specific cognitive tendencies but also personality characteristics (Furnham, 2012; Messick, 1994b; Zhang & Sternberg, 2006). Dispositions also have a motivational component—an *I-want-to-do-it-this-way* quality (Kuhn, 2001a; Perkins & Ritchhart, 2004; Stanovich, 1999).

### DO STUDENTS HAVE DISTINCT LEARNING STYLES?

Over the past few decades, psychologists and educators have examined a wide variety of cognitive styles, sometimes instead using the term *learning styles*. You probably have heard of educators discussing students as perhaps being “visual learners” or “auditory learners.” The notion behind learning styles is that if teachers adjust instruction to meet the favored learning styles of individual students, then learning will be enhanced. Thus, if a “visual learner” is provided with extra visual materials when learning about a new topic, that student's learning will be improved.

Despite the popularity of this idea among educators, there is virtually no evidence that adapting instruction to students' learning styles has any effect on their actual learning (Curry, 1990; R. E. Mayer & Massa, 2003; Nieto & Bode, 2008; Rogowsky, Calhoun, & Tallal, 2015; Roher & Pashler, 2012; Snider, 1990). Many of the styles that have been identified and assessment instruments that have been developed don't hold up under the scrutiny of researchers (Cassidy, 2004; Krätzig & Arbuthnott, 2006; Messick, 1994b). Learning “styles” are basically just preferences; some students may indicate that they prefer to learn through listening, whereas others may indicate that they prefer to learn visually. Nevertheless, these preferences are just that—preferences. It is not the case that students with one preferred style cannot learn just as well when information is presented in other ways.

In fact, adapting instruction to students' preferred learning styles, or even telling students that they may have a learning style, may prove to be detrimental to learning. Consider the following example:


Harper is a sixth grader who does very well in school. On her mid-year report card, Harper's science teacher noted, “Harper does a great job in class; I just wish that she would participate more in our discussions.” When Harper's parents asked her why she did not participate more in class, she responded that “the guidance counselor came in and gave us a test on our learning styles; she told me that I'm a visual learner. Since I am a visual learner, I don't really need to talk to learn; I just watch.”

Why is this situation troubling? First, as we noted before, assessments of learning styles are generally not scientifically verified (and these “styles” are really just preferences). Second, and more disturbing, Harper has interpreted the information about being a visual learner as suggesting that she perhaps is weak in other areas, and thus does not need to learn with other modalities. If Harper is a quiet student, then we might recommend greater verbal interaction so that she can further develop her verbal skills; however, her naïve interpretation of the information about her visual learning style may actually cause her to talk even less!

## DOES IT MAKE SENSE TO TEACH TO STUDENTS’ “RIGHT BRAINS” OR “LEFT BRAINS”?

As a teacher you will probably hear about lessons, materials, and curricula that have been developed based on the latest findings from neuroscience; sometimes this is referred to as *brain-based learning* or *brain-based education*. Neuroscience is a growing area of research with exciting new discoveries emerging all the time; however, most researchers agree that it is too early to be applying this research to daily classroom instruction.

One area that has received much attention is the notion of adapting instruction to the “left brain” or the “right brain.” Neuroscientists, in fact, have completely debunked the idea that we might teach to students’ “left brains” or “right brains”: Even the simplest of everyday thinking tasks requires the left and right hemispheres of the brain to work together (Bressler, 2002; Gonsalves & Cohen, 2010; Haxby et al., 2001; Kalbfleisch & Gillmarten, 2013; Organization for Economic Cooperation and Development, 2015).

 Don't plan instruction based on results you might get from easily available and aggressively marketed “learning style” inventories or “brain-based curricula.”



**MyEdLab**

### Video Example 5.2.

Some learners tend to use analytic thinking, but others use holistic thinking. Teachers can use strategies that facilitate the types of thinking required for specific learning tasks and help students learn to think both analytically and holistically.

## ANALYTIC AND HOLISTIC THINKING

One dimension of cognitive style worthy of our attention, however, is a distinction between analytic and holistic thinking. In *analytic* thinking, learners tend to break new stimuli and tasks into their component parts and to see these parts somewhat independently of their context. In *holistic* thinking, learners tend to perceive situations as integrated, indivisible wholes that are closely tied to their context. Researchers have found cultural differences here: People from mainstream Western culture tend to be analytic thinkers, whereas people from East Asian cultures think more holistically (Park & Huang, 2010; Varnum, Grossmann, Kitayama, & Nisbett, 2010). In general, logical and scientific reasoning requires analytic thinking, but holistic thinking can help learners identify associations and relationships among seemingly very different phenomena. For example, holistically minded Chinese scientists identified the underlying cause of the ocean’s tides—the moon’s gravitational pull on any large body of water—many centuries before more narrowly focused, earth-centered European scientists did (Nisbett, 2009).

In contrast to the mixed research findings regarding cognitive styles and learning styles, research on dispositions has yielded more consistent and fruitful results. Some kinds of dispositions are clearly beneficial for classroom learning:

- *Stimulation seeking*: Eagerly interacting with one’s physical and social environment in order to gain new experiences and information
- *Need for cognition*: Regularly seeking and engaging in challenging cognitive tasks
- *Critical thinking*: Consistently evaluating information or arguments in terms of their accuracy, credibility, and worth, rather than accepting them at face value
- *Open-mindedness*: Flexibly considering alternative perspectives and multiple sources of evidence, and suspending judgment for a time rather than leaping to immediate conclusions (Cacioppo, Petty, Feinstein, & Jarvis, 1996; DeBacker & Crowson, 2008, 2009; Furnham, 2012; Halpern, 2008; Kang et al., 2009; Raine, Reynolds, & Venables, 2002; Southerland & Sinatra, 2003; Stanovich, 1999; West, Toplak, & Stanovich, 2008)

Such dispositions are often positively correlated with students’ learning and achievement, and many theorists have suggested that they play a causal role in what and how much students learn. In fact, dispositions sometimes overrule intelligence in their influence on long-term achievement (Dai & Sternberg, 2004; Kuhn & Franklin, 2006; Perkins & Ritchhart, 2004). For instance, children who eagerly seek out physical and social stimulation as preschoolers later become better readers and earn better grades in school (Raine et al., 2002). Students with a high need for

Chapter 7 describes critical thinking more thoroughly.



cognition learn more from what they read and are more likely to base conclusions on sound evidence and logical reasoning (Cacioppo et al., 1996; Dai, 2002; P. K. Murphy & Mason, 2006). And students who critically evaluate new evidence and open-mindedly listen to diverse perspectives show more advanced reasoning capabilities and are more likely to revise their beliefs in the face of contradictory information (DeBacker & Crowson, 2009; G. Matthews, Zeidner, & Roberts, 2006; Southerland & Sinatra, 2003).

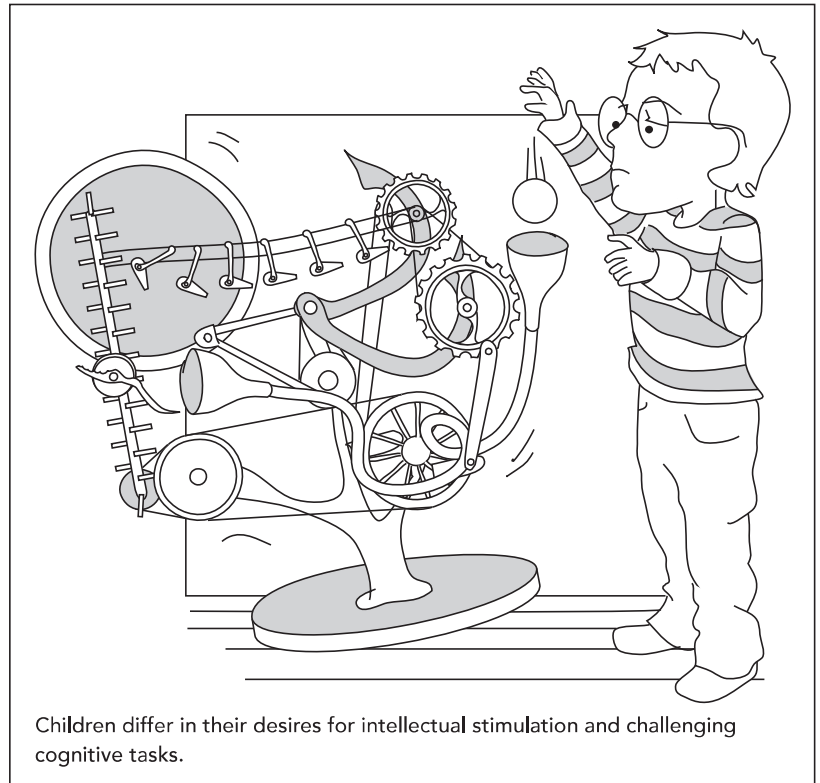
Researchers haven't yet systematically addressed the origins of various dispositions. Perhaps inherited temperamental differences (e.g., in stimulation seeking) are involved (Raine et al., 2002). Beliefs about the underlying nature of knowledge—for instance, the belief that knowledge is fixed and unchanging, on the one hand, or dynamic and continually evolving, on the other—may also play a role (P. M. King & Kitchener, 2002; Kuhn, 2001b; Mason, 2003). And almost certainly teachers' actions and the general classroom atmosphere they create—for example, whether students are encouraged to pursue intriguing topics, take risks, and think critically—make a difference (Flum & Kaplan, 2006; Gresalfi, 2009; Kuhn, 2001b, 2006). In the following classroom interaction, a teacher actually seems to *discourage* any disposition to think analytically and critically about classroom material:

Write this on your paper . . . it's simply memorizing this pattern. We have meters, centimeters, and millimeters. Let's say . . . write millimeters, centimeters, and meters. We want to make sure that our metric measurement is the same. If I gave you this decimal, let's say .234 m (yes, write that). In order to come up with .234 m in centimeters, the only thing that is necessary is that you move the decimal. How do we move the decimal? You move it to the right two places. . . . Simple stuff. (Turner, Meyer, et al., 1998, p. 741)

Undoubtedly this teacher means well, but notice the noncritical attitude she communicates: "Write this . . . it's simply memorizing this pattern." The Into the Classroom feature "Promoting Productive Dispositions" offers strategies that are more likely to be effective.

#### MyEdLab Self-Check 5.2

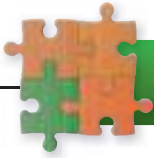
**MyEdLab Application Exercise 5.2.** This interactive exercise allows you to practice identifying teaching strategies that promote productive dispositions.



Beliefs about the underlying nature of knowledge are known as *epistemic beliefs* (see Chapter 7).

## Educating Students with Special Needs in General Education Classrooms

As teachers, we can typically accommodate many students' varying abilities and dispositions within the context of a single curriculum and everyday classroom lessons. But we're also likely to have **students with special needs**—students who are different enough from their peers that they require specially adapted instructional materials and practices to help them maximize their learning and achievement. Some of these students have cognitive, personal, social, or physical disabilities that adversely affect their performance in a typical classroom. Others, instead, are so advanced in a particular domain—that is, they are *gifted*—that they gain little from grade-level activities and assignments.



## Into The Classroom

### Promoting Productive Dispositions

#### Communicate your own eagerness to learn about and master new topics.

In a unit on poetry, a middle school English teacher says, “In our culture we’re accustomed to poems that rhyme and have a steady beat. But many centuries ago the Japanese developed a very different form of poetry. This form, called *haiku*, is really cool. I’ll give you some of my favorite examples, and then as a class we’ll create some new haiku.”

#### Model open-mindedness about diverse viewpoints and a willingness to suspend judgment until all the facts are in.

In a lesson about the properties of air—especially the fact that it takes up space—a first-grade teacher asks her students to predict whether the inside of a glass will get wet or stay dry when it is pushed upside down into a bowl of water. After the glass has been immersed, students come to different conclusions about the wetness or dryness of its inside. The teacher responds, “Uh-oh. Now we have two different opinions. We are going to have to figure out how to solve this problem.” She devises a simple strategy—stuffing a crumpled paper towel into the glass and then re-immersing it in the water—to get more conclusive evidence.

#### Conduct learning activities in which students collaborate to address intriguing, multifaceted issues.

A few weeks before a national presidential election, a high school social studies teacher says to his class, “Many of the campaign ads we see on television now are harshly criticizing opposing candidates, and some of them may be misrepresenting the facts. In your cooperative groups today, you’ll be looking at transcripts of three political ads, one each from a different candidate’s campaign. Each group has at least two laptops or tablets with wi-fi. Your job is to be fact checkers—to search the Internet for credible websites that can either confirm or disconfirm what the candidates are saying about their own records or those of their opponents. Tomorrow we’ll compare the findings of various groups.”

#### Ask students to evaluate the quality of scientific evidence, and scaffold their efforts sufficiently that they can reach appropriate conclusions.

Working in pairs, fifth graders conduct “experiments” in a computer program that simulates the effects of various factors (amount of rainfall, rate of snowmelt, type of soil, etc.) on local flooding. To guide students’ inquiry, the program asks them to form and then test specific hypotheses, and it occasionally asks them if a particular series of tests has controlled for other potentially influential factors.

Sources: Strategies based on discussions by de Jong, 2011; Gresalfi, 2009; Halpern, 1998; Kuhn, 2001b; Perkins & Ritchhart, 2004; vanSledright & Limón, 2006.

In the United States, most students with special educational needs are in general education classrooms for part or all of the school day—a practice known as **inclusion** (U.S. Department of Education, National Center for Education Statistics, 2010). In fact, federal legislation mandates that students with disabilities be educated in neighborhood schools and, ideally, in regular classrooms to the greatest extent possible.

## PUBLIC LAW 94-142: INDIVIDUALS WITH DISABILITIES EDUCATION ACT (IDEA)

In 1975 the U.S. Congress passed Public Law 94-142, which is now known as the **Individuals with Disabilities Education Act (IDEA)**. This act has been amended and reauthorized several times since then, most recently in 2004 under the name *Individuals with Disabilities Education Improvement Act*. It currently grants educational rights from birth until age 21 for people with cognitive, emotional, or physical disabilities. It guarantees several rights for students with disabilities:

- *A free and appropriate education.* All students with disabilities are entitled to a free educational program designed specifically to meet their unique educational needs.
- *Fair and nondiscriminatory evaluation.* A multidisciplinary team conducts an in-depth evaluation of any student who may be eligible for special services. The team’s makeup depends on the student’s needs but typically consists of two or more teachers, any appropriate specialists, and the student’s parent(s) or guardian(s). Using a variety of tests and other evaluation tools, school personnel conduct a complete assessment of potential disabling conditions. Evaluation procedures must take a student’s background and any suspected physical or communication difficulties into account. For example, tests must be administered in a student’s primary language.
- *Education in the least restrictive environment.* To the greatest extent possible, students with disabilities should be included in the same academic environment, extracurricular activities, and social interactions as their nondisabled peers. That is, they must have the **least restrictive environment**, the most typical and standard educational environment that,

with sufficient supplementary aids and support services, can reasonably meet their needs. Exclusion from general education is warranted only when others' safety would be jeopardized or when, even with proper support and assistance, a student can't make appreciable progress in a general education setting.

- *Individualized education program (IEP)*. When an individual aged 3 to 21 is identified as having a disability, the multidisciplinary team collaboratively develops an instructional program, called an **individualized education program (IEP)**, tailored to the individual's strengths and weaknesses (see Figure 5.2). The IEP is a written statement that the team continues to review and, if appropriate, revise at least once a year—more frequently if conditions warrant. IEP meetings are most effective when they (a) are well planned and (b) have a designated meeting facilitator, a clear agenda, and ground rules for how to run the meeting, and when participants (c) have sufficient knowledge about these meetings and avoid using jargon (Diliberto & Brewer, 2014).
- *Due process*. IDEA mandates several practices that ensure that students' and parents' rights are preserved throughout the decision-making process. For instance, parents must be notified in writing before the school takes any action that might change their child's educational program. If the parents and school system disagree on the most appropriate placement for a child, mediation or a hearing can be used to resolve the differences.

IDEA has had a significant impact on the nature of special education. More and more, teachers are realizing that truly inclusive practices require differentiated instruction for *all* students, not just those with formally identified needs. And rather than provide specialized instruction in a separate classroom, many special education teachers now partner with regular classroom teachers to jointly teach all students—both those with disabilities and those without.

## POTENTIAL BENEFITS AND DRAWBACKS OF INCLUSION

Despite the mandates of IDEA, inclusive practices for students with disabilities have been controversial. Some experts argue that students are most likely to develop normal peer relationships and social skills when they participate fully in their school's overall social life. But others worry that when students with special needs are in a regular classroom for the entire school day, they can't get the intensive specialized instruction they may need. Furthermore, nondisabled classmates may stigmatize, avoid, or bully students who appear to be odd or incompetent in some way (Blake, Lund, Zhou, Kwok, & Benz, 2012; Hamovitch, 2007).

Numerous research studies have suggested that attending general education classes for part or all of the school day can have several positive outcomes for students with disabilities:

- Academic achievement equivalent to (and sometimes higher than) that in a self-contained classroom



Provide as typical an educational experience as possible for *all* of your students.



MyEdLab

### Video Example 5.3.

The Individuals with Disabilities Education Act (IDEA) grants educational rights to students with disabilities. When these students are included in the general education classroom, their individualized education program (IEP) is developed by a multidisciplinary team.

**FIGURE 5.2** Components of an individualized education program (IEP).

In the United States, any IEP written for a student with a disability must include the following information:

- *Current performance*: Information about the student's current school achievement levels, including classroom tests and assignments, teachers' and specialists' observations, and results of individually administered assessments.
- *Annual goals*: objectives or benchmarks for the school year related to the student's academic, social, behavioral, and/or physical needs.
- *Special education and related services*: The special services, supplementary aids, and program modifications that will be provided in order to help the student meet the annual goals.
- *Participation with nondisabled children*: If applicable, explanation of the extent to which the student will *not* participate in regular classroom and extracurricular activities.
- *Measurement of progress*: Information regarding how the student's progress will be monitored and how parents will be informed of this progress.
- *Participation in state and district-wide tests*: Explanation of any modifications or exclusions with respect to regularly administered achievement tests and, if applicable, description of any alternative measures of achievement.
- *Dates and places*: Information regarding when and where services will begin and how long they will continue.
- *Transition services*: For any student aged 14 (or younger, if appropriate), any special services needed for reaching post-school goals and preparing to leave school.

Source: U.S. Department of Education, Office of Special Education and Rehabilitative Services, 2000.

- More appropriate classroom behavior, better social skills, and more frequent interaction with nondisabled peers
- Better sense of self *if* the school environment is one in which all students accept and respect individual differences among their peers (Halvorsen & Sailor, 1990; Hamovitch, 2007; Hattie, 2009; P. Hunt & Goetz, 1997; MacMaster, Donovan, & MacIntyre, 2002; Slavin, 1987; Soodak & McCarthy, 2006; Stainback & Stainback, 1992)

We're especially likely to see such outcomes when students understand the nature of their disabilities and when instruction and materials are tailored to students' specific needs, perhaps in their regular classrooms or perhaps in short resource-room sessions (e.g., H. L. Swanson, Hoskyn, & Lee, 1999). Appropriate **assistive technology**—electronic devices and other equipment that can enhance students' abilities and performance—is also extremely valuable in helping students successfully participate in the curriculum and social life of general education classrooms.

Nondisabled students often benefit from inclusive practices as well. For example, they may be able to take advantage of special supports designed for students with disabilities—perhaps detailed study guides or supplementary explanations (C. M. Cole et al., 2004). Furthermore, they acquire an increasing awareness of the heterogeneous nature of the human race and discover that individuals with special needs are in many respects very much like themselves (P. Hunt & Goetz, 1997; D. Staub, 1998). One of us authors often thinks about her son Jeff's friendship with Evan, a classmate with severe physical and cognitive disabilities, during their third-grade year. A teacher had asked Jeff to be a special friend to Evan, interacting with him at lunch and whenever possible. Although largely unable to speak, Evan always made it clear through gestures and expressions that he was delighted to spend time with his friend, giving Jeff—who was quite shy—a boost in social self-confidence. Several years later Jeff reflected on this friendship:

It made me realize that Evan was a person too. It made me realize that I could have a friendship with a boy with disabilities. Doing things that made Evan happy made me happy as well. I knew that *Evan* knew that we were friends.

It's essential, of course, that nondisabled students treat classmates who have disabilities in respectful and supportive ways and, better still, forge friendships with these classmates. As teachers, we can do several things to nurture good relationships between students:

- Explicitly point out the strengths of a student with a disability.
- Ask students with and without disabilities to assist others in their areas of strength.
- Plan academic and recreational activities that require cooperation.
- Encourage students with disabilities to participate in extracurricular activities and community events. (Bassett et al., 1996; DuPaul, Ervin, Hook, & McGoey, 1998; Hamovitch, 2007; Madden & Slavin, 1983; Turnbull, Pereira, & Blue-Banning, 2000)

There are advantages and drawbacks to inclusion for classroom teachers as well. On the positive side, the inclusion of students with disabilities can lead to greater acceptance of individuals with disabilities among other students and increased opportunities for students to work in diverse groups and explain concepts to one another. Nevertheless, the inclusion of students with disabilities in regular classrooms does introduce some challenges for teachers. For example, teachers may need to differentiate instruction to a greater degree, prepare alternative materials for some students, and spend extra time with students with disabilities.

## IDENTIFYING STUDENTS' SPECIAL NEEDS: RESPONSE TO INTERVENTION AND PEOPLE-FIRST LANGUAGE

Experts don't completely agree about how to define various categories of special needs—especially those not involving obvious physical conditions—or about how best to identify students who fit into each category. In the United States, IDEA provides specific identification criteria for various disabilities. Students with disabilities who don't meet IDEA's criteria are often eligible for special educational services under Section 504 of the Rehabilitation Act of 1973 (sometimes referred to simply as *Section 504*). This act stipulates that institutions that benefit from federal funding (including public schools) can't discriminate against individuals on the basis of a disability.

Procedures for assessing and accommodating students' disabilities are less prescriptive in Section 504 than they are in IDEA—a situation that can be either advantageous or disadvantageous, depending on the circumstances.

One approach to identification that is gaining increasing support (and that is endorsed in the 2004 reauthorization of IDEA) involves determining **response to intervention (RTI)**. In this approach, a teacher keeps an eye out for any student who has exceptional difficulty with basic skills in a certain domain (e.g., in reading or math) despite normal whole-class instruction *and* intensive follow-up small-group instruction that have both been shown *by research* to be effective for most children. Such a student is referred for in-depth assessments of various characteristics and abilities. If the assessment rules out obvious disabling conditions (e.g., significant genetic abnormalities, sensory impairments), the student is assumed to have a cognitive impairment—often, but not always, falling within the category of learning disabilities—and is therefore eligible for special services (e.g., Fletcher & Vaughn, 2009; L. S. Fuchs & Fuchs, 2009; Mellard & Johnson, 2008).

Whenever we identify a student as having a particular disability, however, we run the risk of focusing other people's attention on weaknesses rather than on the student's many strengths and age-typical characteristics. To minimize such an effect, special educators urge us all to use **people-first language** when referring to students with disabilities—in other words, to mention the person *before* the disability. For instance, we might say *student with a learning disability* rather than *learning-disabled student* or *student who is blind* rather than *blind student*.

In upcoming sections of the chapter, we group students with special needs into five general categories. Table 5.2 lists the specific kinds of special needs that fall within each category. Disabilities covered by IDEA appear in **red** in the table.

#### MyEdLab Self-Check 5.3

**MyEdLab Application Exercise 5.3.** This interactive exercise allows you to practice identifying instructional adaptations tailored to the specific strengths and weaknesses of a student with special needs.



## Students with Specific Cognitive or Academic Difficulties

Some students with special educational needs show no outward signs of physical disability yet have cognitive difficulties that interfere with their ability to learn certain kinds of academic material or perform certain kinds of classroom tasks. Such students include those with learning disabilities, attention-deficit hyperactivity disorder, and speech and communication disorders.

### LEARNING DISABILITIES

Although there are varying definitions of learning disabilities, students with **learning disabilities** have significant difficulties in one or more specific cognitive processes that can't be attributed to cultural or linguistic diversity, generally delayed cognitive development, emotional problems, sensory impairment, or environmental deprivation. Such difficulties often appear to result from specific and possibly inherited brain dysfunctions (American Psychiatric Association, 2013; N. Gregg, 2009; K. Pugh & McCardle, 2009). Figure 5.3 lists several forms that a learning disability might take.

### COMMON CHARACTERISTICS

In general, students with learning disabilities are different from one another in many more ways than they are similar. They typically have many strengths but may also face challenges:

- Poor reading and writing skills
- Ineffective learning and memory strategies
- Trouble concentrating on and completing assigned tasks, especially in the face of distractions
- Poor sense of self and low motivation for academic tasks, especially in the absence of individualized assistance in areas of difficulty



Use people-first language when talking about students with disabilities.



#### MyEdLab Video Example 5.4.

In the general education classroom, teachers adapt instructional strategies to meet the learning needs of students with various difficulties and disabilities.

## STUDENTS IN INCLUSIVE SETTINGS

TABLE 5.2 • General and Specific Categories of Students with Special Needs (Specific Categories Listed in Red Are Covered by IDEA)

GENERAL CATEGORY	SPECIFIC CATEGORIES	DESCRIPTION
<b>Students with specific cognitive or academic difficulties:</b> These students exhibit an uneven pattern of academic performance; they may have unusual difficulty with certain kinds of tasks yet perform quite successfully on other tasks.	Learning disabilities	Difficulties in specific cognitive processes (e.g., in perception, language, or memory) that cannot be attributed to other disabilities, such as mental retardation, emotional or behavioral disorders, or sensory impairments
	Attention-deficit hyperactivity disorder (ADHD) (not specifically covered by IDEA, but students are often eligible for special services under the IDEA category <b>Other Health Impairments</b> )	Disorder marked by either or both of these characteristics: (1) difficulty focusing and maintaining attention and (2) frequent hyperactive and impulsive behavior
	<b>Speech and communication disorders</b>	Impairments in spoken language (e.g., mispronunciations of certain sounds, stuttering, or abnormal syntactical patterns) or in language comprehension that significantly interfere with classroom performance
<b>Students with social or behavioral problems:</b> These students exhibit social, emotional, or behavioral difficulties serious enough to interfere significantly with their academic performance.	<b>Emotional and behavioral disorders</b>	Emotional states and behaviors that are present over a substantial period of time and significantly disrupt academic learning and performance
	<b>Autism spectrum disorders</b>	Disorders marked by impaired social cognition, social skills, and social interaction, as well as repetition of certain idiosyncratic behaviors; milder forms (e.g., Asperger syndrome) associated with normal development in other domains; extreme forms associated with delayed cognitive and linguistic development and highly unusual behaviors
<b>Students with general delays in cognitive and social functioning:</b> These students exhibit low achievement in virtually all academic areas and have social skills typical of much younger children.	<b>Intellectual disabilities (mental retardation)</b>	Significantly below-average general intelligence and deficits in adaptive behavior (i.e., in practical and social intelligence); deficits are evident in childhood and typically appear at an early age.
<b>Students with physical or sensory challenges:</b> These students have disabilities caused by diagnosed physical or medical problems.	<b>Physical and health impairments</b>	Physical or medical conditions (usually long-term) that interfere with school performance as a result of limited energy and strength, reduced mental alertness, or little muscle control
	<b>Visual impairments</b>	Malfuncions of the eyes or optic nerves that prevent normal vision even with corrective lenses
	<b>Hearing loss</b>	Malfuncions of the ear or associated nerves that interfere with the perception of sounds within the frequency range of normal speech
<b>Students with advanced cognitive development:</b> These students have unusually high ability in one or more areas.	Giftedness (not covered by IDEA unless a disability is also present)	Unusually high ability or aptitude in one or more domains, usually within the academic curriculum, requiring special educational services to help students meet their full potential

- Poor motor skills
- Poor social skills (Estell et al., 2008; Gathercole, Lamont, & Alloway, 2006; N. Gregg, 2009; Job & Klassen, 2012; K. Pugh & McCardle, 2009; Swanson, in press; Waber, 2010)

By no means do such characteristics describe *all* students with learning disabilities. For instance, some are attentive in class, and some are socially skillful and popular with peers.

Sometimes learning disabilities reflect a mismatch between students' developing abilities, on the one hand, and grade-level expectations for performance, on the other (Waber, 2010). For instance, as students reach middle school, they're typically expected to work with little or no supervision, yet students with learning disabilities don't always have the time management skills they need to get things done (N. Gregg, 2009). In high school classes, learning may require

**FIGURE 5.3** Examples of cognitive processing deficiencies in students with learning disabilities.

**Perceptual difficulty.** Students may have trouble understanding or remembering information they receive through a particular modality, such as vision or hearing.

**Memory difficulty.** Students may have less capacity for remembering information over either the short or long run (i.e., they may have problems with either *working memory* or *long-term memory*).

**Metacognitive difficulty.** Students may have difficulty using effective learning strategies, monitoring progress toward learning goals, and in other ways directing their own learning.

**Oral language processing difficulty.** Students may have trouble understanding spoken language or remembering what they have been told.

**Reading difficulty.** Students may have trouble recognizing printed words or comprehending what they read; extreme form is known as *dyslexia*.

**Written language difficulty.** Students may have problems in handwriting, spelling, or expressing themselves coherently on paper; an extreme form is known as *dysgraphia*.

**Mathematical difficulty.** Students may have trouble thinking about or remembering information involving numbers; an extreme form is known as *dyscalculia*.

**Social perception difficulty.** Students may have trouble interpreting others' social cues and signals and thus may respond inappropriately in social situations.

**Music processing difficulty.** Students may have little sensitivity to differences in pitch and be unable to recognize familiar tunes; an extreme form is known as *amusia*.

reading and studying sophisticated textbooks, yet the average high school student with a learning disability reads at a fourth- to fifth-grade level and has few, if any, effective study strategies (Cutting, Eason, Young, & Alberstadt, 2009; Meltzer & Krishnan, 2007).

The following exercise can give you a sense of how these students might feel under such circumstances.

## EXPERIENCING FIRSTHAND

### A READING ASSIGNMENT

Read the following passage carefully. You'll be tested on its contents later in the chapter.

Personality research needs to refocus on global traits because such traits are an important part of everyday social discourse, because they embody a good deal of folk wisdom and common sense, because understanding and evaluating trait judgments can provide an important route toward the improvement of social judgment, and because global traits offer legitimate, if necessarily incomplete, explanations of behavior. A substantial body of evidence supporting the existence of global traits includes personality correlates of behavior, interjudge agreement in personality ratings, and the longitudinal stability of personality over time. Future research should clarify the origins of global traits, the dynamic mechanisms through which they influence behavior, and the behavioral cues through which they can most accurately be judged. (Funder, 1991, p. 31)

How well do you think you will perform on the upcoming test about this passage?

The passage you just read is a fairly typical one from *Psychological Science*, a professional journal written for people with advanced education (e.g., doctoral degrees) in psychology. Hence, it was written well above a typical college student's reading level. We won't *really* test you on the passage's contents, but we authors hope that the exercise gave you a feel for the frustration that high school students with learning disabilities might experience. For many students with learning disabilities, completing school assignments may constantly seem like fighting an uphill battle. Perhaps for this reason, a higher-than-average percentage of students with learning disabilities drop out of school before graduation (N. Gregg, 2009).

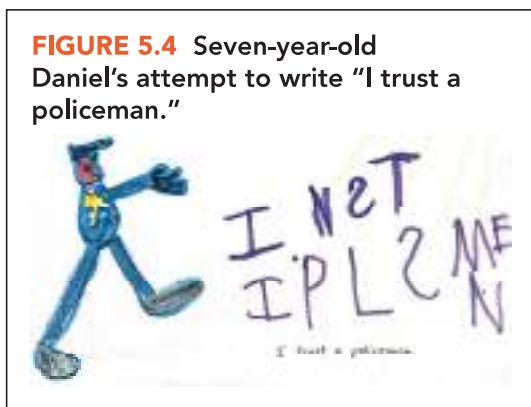
## ADAPTING INSTRUCTION

Instructional strategies for students with learning disabilities must be tailored to students' specific strengths and weaknesses. If you become a regular classroom teacher, you will quite likely partner with a special educator when you have students with learning disabilities in your classes. You and the special educator will work collaboratively to adapt your instruction at times. Several strategies should benefit many of these students:

- *Minimize distractions.* Because many students with learning disabilities are easily distracted, we should minimize the presence of other stimuli that might compete for their attention—for example, by pulling down window shades if other classes are playing outside and by asking students to clear away materials they don't immediately need (Buchoff, 1990).
- *Present new information in an explicit and well-organized manner.* Most students with learning disabilities learn more successfully when instruction directly communicates what they need to learn, rather than requiring them to draw inferences and synthesize ideas on their own. Frequent and carefully structured practice of important skills is also critical (Fletcher, Lyon, Fuchs, & Barnes, 2007; J. A. Stein & Krishnan, 2007; U.S. Department of Education, 2014).
- *Present information in multiple sensory modalities.* Because some students with learning disabilities have trouble learning through a particular sensory modality, we need to think broadly about the modalities we use to communicate information. Thus we might incorporate videos, graphics, and other visual materials, and we might encourage students to audiotape lectures. And, when teaching children to recognize letters, we might have them not only look at the letters but also trace large, textured letter shapes with their fingers (Florence, Gentaz, Pascale, & Sprenger-Charolles, 2004; J. A. Stein & Krishnan, 2007; J. W. Wood & Rosbe, 1985).
- *Present stimulating, novel materials,* which may be particularly helpful in preventing students from getting bored and maintaining their attention while reading (Beike & Zentall, 2012).

For example, stories that have a surprising turn of events may be particularly beneficial for the engagement of students with learning disabilities during reading.

- *Analyze students' errors for clues about processing difficulties.* As an example of this strategy, look at 7-year-old Daniel's attempt to write "I trust a policeman" in Figure 5.4. Daniel captured several sounds correctly, including the "s" and final "t" sounds in *trust* and all of the consonant sounds in *policeman*. However, he misrepresented the first two consonant sounds in *trust*, replacing the *t* and *r* with an *N*. He also neglected to represent most of the vowel sounds, and two of the three vowels he did include (*I* for the article *a* and the *E* near the end of *policeman*) are incorrect. We might suspect that Daniel has difficulty hearing all the distinct sounds in spoken words and matching them with the letters he sees in written words. Such difficulties are quite common in students with significant reading disabilities (Goswami, 2007; N. Gregg, 2009; K. Pugh & McCardle, 2009).



Chapter 6 and Chapter 7 provide many strategies for helping students study and learn.

- *Teach study skills and learning strategies.* Many students with learning disabilities benefit from being taught specific strategies for completing assignments and remembering subject matter (Joseph & Konrad, 2009; Meltzer, 2007; Wilder & Williams, 2001). For example, we might teach them strategies for taking notes and organizing homework, and we can teach them specific *mnemonics*, or memory tricks, to help them remember facts (see Figure 5.5).
- *Provide paper or electronic scaffolding that can support students as they study and work.* We might develop study guides, outlines, or graphics that help students identify and interrelate important concepts and ideas. We could provide a copy of a high-achieving classmate's lecture notes. And we can teach students how to use the grammar and spell checkers in word processing software (N. Gregg, 2009; Mastropieri & Scruggs, 1992; Meltzer, 2007).

## ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD)

Virtually all students are apt to be inattentive, hyperactive, and impulsive at one time or another. But those with **attention-deficit hyperactivity disorder (ADHD)** typically have significant and chronic deficits in these areas, as reflected in the following identification criteria:

- *Inattention.* Students may have considerable difficulty focusing and maintaining attention on assigned tasks, especially when appealing alternatives are close at hand. They may have trouble listening to and following directions, and they may often make careless mistakes.



- *Hyperactivity.* Students may seem to have an excess amount of energy. They're apt to be fidgety and may move around the classroom at inappropriate times.
- *Impulsivity.* Students almost invariably have trouble inhibiting inappropriate behaviors. They may blurt out answers, begin assignments prematurely, or engage in risky or destructive behaviors without thinking about potential consequences. (American Psychiatric Association, 2000; Barkley, 2006; Gatzke-Kopp & Beauchaine, 2007; N. Gregg, 2009)

Students with ADHD don't necessarily show all three of these characteristics. For instance, some are inattentive without also being hyperactive, as is true for Tim in the opening case study. But all students with ADHD appear to have one characteristic in common: an *inability to inhibit inappropriate thoughts, inappropriate actions, or both* (Barkley, 2006, 2010; B. J. Casey, 2001; Nigg, 2010). Tim, for example, is easily distracted by his thoughts and daydreams when he should be focusing on a classroom lesson.

The prevalence of ADHD in the United States may surprise you. First, boys are about twice as likely as are girls to be diagnosed with ADHD. In the United States approximately 6.4 million students are diagnosed with ADHD at some point in time. In addition, these diagnoses have increased by 53% over the past decade (National Center for Learning Disabilities, 2014). The increase in diagnoses is due to a number of factors, including greater awareness of ADHD and thus more frequent diagnoses.

In many instances, ADHD appears to be the result of brain abnormalities that limit students' ability to focus their attention and control their behaviors (e.g., Kadziela-Olech, Cichocki, Chwiesko, Konstantynowicz, & Braszko, 2015). Sometimes these abnormalities are inherited, but sometimes, instead, they're the result of toxic substances in children's early environments—perhaps high lead content in the paint dust of old buildings (Accardo, 2008; Barkley, 2010; Faranoe et al., 2005; Gatzke-Kopp & Beauchaine, 2007; Nigg, 2010).

## COMMON CHARACTERISTICS

In addition to inattentiveness, hyperactivity, and impulsivity, students identified as having ADHD may have characteristics such as these:

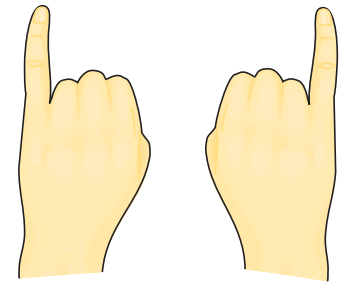
- Exceptional imagination and creativity; exceptionally detailed memories
- Certain specific cognitive processing difficulties (e.g., see Figure 5.6) and low school achievement
- Problems with planning and time management
- Classroom behavior problems (e.g., disruptiveness, noncompliance)
- Poor social skills and interpersonal difficulties
- Increased probability of substance abuse in adolescence (Barkley, 2006; Gatzke-Kopp & Beauchaine, 2007; S. Goldstein & Rider, 2006; N. Gregg, 2009; Hallowell, 1996; Skowronek, Leichtman, & Pillemer, 2008; Tarver, Daley, & Sayal, 2014)

Students' attention, hyperactivity, and impulsiveness problems may diminish somewhat in adolescence, but they don't entirely disappear, making it difficult for students to handle the increasing demands that come in high school; for many, ADHD continues into and sometimes throughout adulthood (Tarver, Daley, & Sayal, 2014). Accordingly, students with ADHD are at greater-than-average risk for dropping out of school (Barkley, 2006; S. Goldstein & Rider, 2006; N. Gregg, 2009; E. L. Hart, Lahey, Loeber, Applegate, & Frick, 1995). ADHD continues to be a life-long issue for some individuals (Tarver et al., 2014).

## ADAPTING INSTRUCTION

Some students with ADHD take medication that helps them control their symptoms. But medication alone is rarely sufficient to enable classroom success; individually tailored educational interventions are also in order (Purdie, Hattie, & Carroll, 2002). The strategies previously listed for students with learning disabilities can often be helpful

**FIGURE 5.5** A mnemonic for remembering the letters b and d.



Young children with learning disabilities often confuse lowercase b and d. By clenching their fists as shown here and “reading” their hands in the normal left-to-right direction, they can more easily remember the difference: b comes first in both the alphabet and the fists.

**FIGURE 5.6** Like many students with ADHD, 10-year-old Joshua has specific cognitive processing difficulties. Although he has the math skills of a typical fifth grader, he has delayed reading comprehension and writing skills, as reflected in the book report shown here. Josh can more easily express his thoughts orally.

I am just here with boom I really like the book that I chose and it was a good chase. The chase not go had to see Francis and find her. Peo Pals she stay in the Arctic. I would be saved too and uola. Mya X has survived there about done.

for students with ADHD. Researchers and practitioners have offered several additional suggestions:

- *Modify students' work environments and schedules.* Students with ADHD do better in a work environment that features minimal distractions, some degree of structure, and ongoing teacher monitoring. And ideally, students should have most academic subjects and challenging tasks in the morning rather than in the afternoon, as the symptoms of ADHD tend to get progressively worse as the day goes on (Barkley, 2006; N. Gregg, 2009).
- *Explicitly facilitate attention and concentration.* Students may benefit from soundproof headphones or “white noise” machines that block out potentially distracting sounds, or, for a low-tech alternative, we might encourage them to move to a new location if their current one presents too many distractions (Buchoff, 1990; N. Gregg, 2009). Also, some computer programs give students practice in focusing and keeping their attention on specific stimuli (e.g., Klingberg, Keonig, & Bilbe, 2002; Rueda, Rothbart, McCandliss, Saccomanno, & Posner, 2005). Even using colored highlighting to point out particularly relevant information in reading materials or math problems may improve performance (Kercood, Zentall, Vinh, & Tom-Wright, 2012).
- *Provide outlets for excess energy.* To help students control excess energy, we should intersperse quiet academic work with frequent opportunities for exercise (Pellegrini & Bohn, 2005; Pfiffner, Barkley, & DuPaul, 2006). We might also give students a settling-in time after recess or lunch—perhaps reading an excerpt from a high-interest book or article—before asking them to engage in an activity that involves quiet concentration (Pellegrini & Horvat, 1995).
- *Help students organize and use their time effectively.* For example, we can show them how to prioritize activities, create to-do lists, and establish a daily routine that they post on their desks. We can break large tasks into smaller ones and set a short time limit for each subtask. And we can provide a folder in which students transport homework assignments to and from school (Buchoff, 1990; N. Gregg, 2009; Pfiffner et al., 2006).

## SPEECH AND COMMUNICATION DISORDERS

**Speech and communication disorders** are impairments in spoken language or language comprehension that significantly interfere with students' academic performance. Examples include persistent articulation problems (e.g., see Figure 5.7), stuttering, abnormal syntactical patterns, and difficulty understanding other people's speech. By the time children reach the first grade, about 5% have noticeable speech disorders (National Institute of Deafness and Other Communication Disorders, 2010). Sometimes, but not always, these children have difficulty perceiving and mentally processing particular aspects of spoken language—a subcategory of speech and communication disorders known as *specific language impairments*. And often—but again, not always—the source of the disorder can be traced to heredity or brain abnormalities (Bishop, 2006; J. L. Locke, 1993; Spinath, Price, Dale, & Plomin, 2004).

### COMMON CHARACTERISTICS

Although some students with speech and communication disorders have other disabilities as well, many of them are in most ways just typical students. Nevertheless, the following characteristics are fairly common:

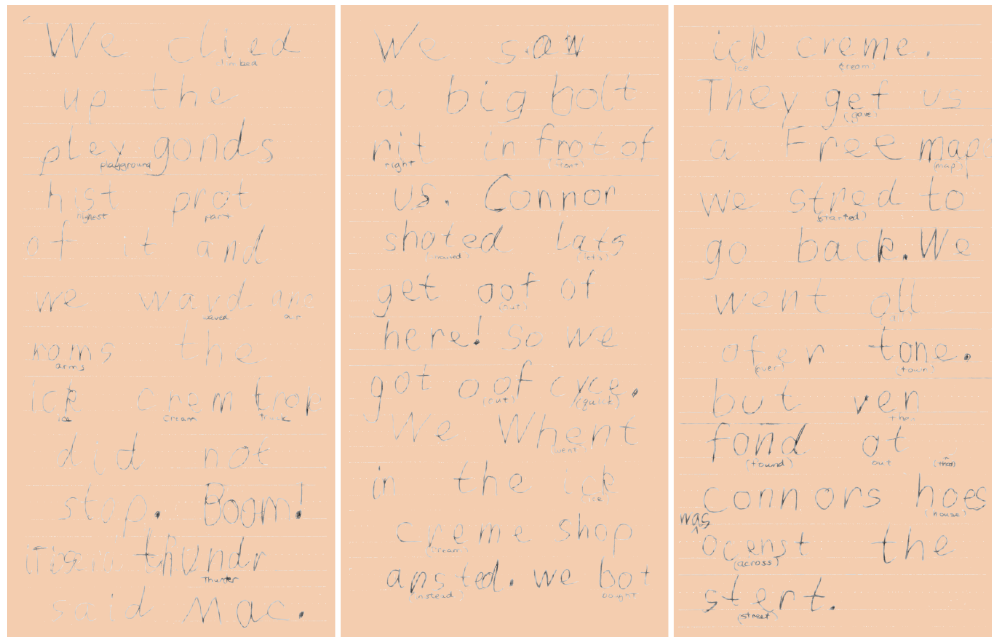
- Reluctance to speak; embarrassment and self-consciousness when speaking
- Difficulties in reading and writing (Fey, Catts, & Larrivee, 1995; Heward, 2009; LaBlance, Steckol, & Smith, 1994; Rice, Hadley, & Alexander, 1993)





### ADAPTING INSTRUCTION

Usually a trained specialist will work with students to help them improve or overcome their speech and communication difficulties. Although students may display deficits in only one noticeable part of speech, the specialist quite likely will intervene and work on a variety of aspects of speech (Owens, Farinella, & Metz, 2015). Nevertheless, general education teachers can assist in several ways:

Specific language impairments are described in Chapter 2.

**FIGURE 5.7** Seven-year-old Isaac receives speech therapy at school to address his consistent mispronunciation of certain sounds (such as pronouncing “th” as “v”). In his writing, he sometimes spells words as he says them rather than as he hears them (for instance, he writes *ven* for *then*).



-  *Encourage regular oral communication.* Students with speech and communication disorders need as much practice in classroom-based public speaking as their classmates do. Thus, we should encourage them to talk in class, provided that doing so doesn't create exceptional stress (Hallahan, Kauffman, & Pullen, 2009; Patton, Blackbourn, & Fad, 1996). We also should provide models of sentences and phrases that are easy for the child to understand, but also grammatically correct (Owens et al., 2015).
-  *Listen patiently.* When students have trouble expressing themselves, we might be tempted to assist them, perhaps by finishing their sentences for them. But we help them more when we allow them to complete their own thoughts, and we must encourage their classmates to be equally patient (Heward, 2009; Patton et al., 1996). One of the authors of this book had a friend during adolescence who stuttered. In order to help the student, friends often would complete sentences for him when he was struggling to articulate a thought; however, when it was pointed out that it would be more helpful to listen patiently and allow the friend to complete his sentence for himself, conversations with the friend got much easier.
-  *Ask for clarification when a message is unclear.* If we haven't entirely understood what students are saying, we should explain what we *did* understand and ask for clarification of the rest. Honest feedback helps students learn how well they're communicating (Patton et al., 1996).
-  *Use augmentative and alternative communication (AAC) when students have little or no oral language.* Some forms of AAC involve computer technology; for example, a laptop or computer tablet might have a touchscreen that “speaks” when a student puts a finger on particular words or symbols. Others are nonelectronic; for example, we might give students a set of pictures or teach them some gestures they can use to represent their thoughts (Beukelman & Mirenda, 2005). For those of us who don't have easy access to speech experts, assessments and interventions can be provided via the Internet (Waite, Theodoros, Russell, & Cahill, 2010, 2012).

## GENERAL RECOMMENDATIONS

In addition to the strategies described in the preceding pages, several general ones apply to many students with specific cognitive or academic difficulties:

- *Get an early start on appropriate interventions.* When students lack basic concepts and skills on which their future learning will depend, intensive instruction to fill in the gaps—and the earlier, the better—can often make a significant difference in their achievement over the long run (L. S. Fuchs et al., 2005; Waber, 2010; Wanzek & Vaughn, 2007).
- *Take skill levels into account when assigning reading materials.* Even after intensive reading instruction, many students with specific cognitive or academic difficulties continue to have poor reading skills. Thus, we may sometimes need to identify alternatives to standard grade-level textbooks for presenting academic content. For example, we might reduce the amount of required reading, substitute materials written on a simpler (yet not babyish) level, or present information through some medium other than printed text—perhaps audiotapes or text-to-speech computer software (N. Gregg, 2009; Mastropieri & Scruggs, 2007). Students may also need extra guidance and support when assignments require them to find and read information on the Internet (Sampson, Szabo, Falk-Ross, Foote, & Linder, 2007).
- *Clearly describe expectations for academic performance.* Students will have an easier time accomplishing classroom tasks if they're told, in concrete and precise terms, exactly what's expected of them (Meltzer & Krishnan, 2007). For example, before students begin a science lab activity, we might first remind them to carefully follow the steps described on the lab sheet, then review safety precautions, and finally provide a written list of components that should be included in lab reports.
- *Take steps to enhance self-confidence and motivation.* Students with a long history of failure at academic tasks need to see that they're making progress and that they do some things quite well. For instance, we can give them daily or weekly goals we know they can attain. We can also have them keep journals in which they describe the successes they've achieved each day. And, of course, we should give them opportunities to do tasks at which they excel (Buchoff, 1990; J. A. Stein & Krishnan, 2007).

**MyEdLab Application Exercise 5.4.** This interactive exercise gives you the opportunity to practice applying instructional adaptations and classroom practices that meet unique needs of students with specific cognitive or academic difficulties.



## Students with Social or Behavioral Problems

For more information about matching instructional strategies to students' temperaments, see the section on *goodness of fit* in Chapter 3.

Many students have minor social, emotional, or behavioral difficulties at one time or another, particularly during times of unusual stress or major life changes. Often these problems are temporary ones that require only a little extra support from caring adults and peers. At other times problems are more enduring but *don't* reflect a disability. Perhaps a student's temperament is a poor fit with a teacher's instructional strategies—for instance, an especially fidgety child may perform poorly on lengthy seatwork assignments—or perhaps a teacher simply hasn't made clear the expectations and rules for classroom behavior (Keogh, 2003; Mehan, 1979). In such situations students' problems may decrease or disappear with a change in instructional practices or classroom management strategies.

However, some students show a pattern of engaging in behaviors that consistently interfere with their learning and performance *regardless* of the teacher and the classroom environment. In this section we'll look at two groups of students who fit into this category: those with emotional and behavioral disorders and those with autism spectrum disorders.

## EMOTIONAL AND BEHAVIORAL DISORDERS

Students with **emotional and behavioral disorders** become identified as students with special needs—and therefore qualify for special educational services—when their problems have a

substantial negative impact on classroom learning. Nevertheless, in the United States, some students do not receive adequate services; although these students represent between 3% and 6% of the population of students, less than 1% receive special education services under this categorization (Lane, Menzies, Kalberg, & Oakes, 2012). Symptoms of emotional and behavioral disorders typically fall into one of two broad categories. **Externalizing behaviors** have direct or indirect effects on other people; examples include aggression, defiance, stealing, and general lack of self-control. **Internalizing behaviors** primarily affect the student with the disorder; examples include severe anxiety or depression, exaggerated mood swings, withdrawal from social interaction, and eating disorders. Students with externalizing behaviors—who are more likely to be boys than girls—are more likely to be referred for evaluation and possible special services. However, students with internalizing behaviors—who are more likely to be girls than boys—can be just as much at risk for school failure (Angold, Worthman, & Costello, 2003; Gay, 2006; Hayward, 2003). These disorders need to be taken seriously, because, in addition to school failure, students with externalizing and internalizing behaviors are more at risk for serious mental health issues, including thinking about or attempting suicide (Peter & Roberts, 2010).

Some emotional and behavioral disorders result from environmental factors, such as stressful living conditions, child maltreatment, or family alcohol or drug abuse (P. T. Davies & Woitach, 2008; D. Glaser, 2000; Maughan & Cicchetti, 2002). But biological causes (e.g., inherited predispositions, chemical imbalances, brain injuries) may also be involved, either by themselves or through interaction with environmental conditions (Dodge, 2009; Raine, 2008; Yeo, Gangestad, & Thoma, 2007). Some students with a genetic predisposition for an emotional or behavioral disorder exhibit few, if any, signs until adolescence, as the following case illustrates:

As a ninth grader, Kirk was a well-behaved, likeable student who earned As and Bs and showed particular promise in science and math. But in 10th grade, his grades began to decline, and he increasingly exhibited hostile and defiant behaviors. When Kirk failed three classes during the fall of his 12th-grade year, the school principal convened a meeting with him, his parents, and his faculty advisor to discuss how to help Kirk get back on track. At the meeting the principal described several occasions on which Kirk had acted disoriented, belligerent, and seemingly “high” on drugs. Despite his strong desire to attend college the following year, Kirk sat at the meeting smirking (seemingly gleeful about his predicament) and focusing his attention on sorting pieces of trail mix in a bowl on the conference room table. By the end of the meeting, the principal was so infuriated that she expelled him from school.

Over the next few weeks, Kirk’s mental condition and behavior continued to deteriorate, to the point that he was soon arrested, placed in a juvenile detention facility, and eventually hospitalized in the state mental institution.

Kirk was ultimately diagnosed with *bipolar disorder*, a condition that is usually inherited and is characterized by excessive mood swings (hence, the disorder is sometimes called manic depression) and in some cases (like Kirk’s) by distorted thought processes. Bipolar disorder often doesn’t appear until adolescence, even though its biological underpinnings have been present since birth (Griswold & Pessar, 2000).

When students have emotional or behavioral disorders, their inappropriate behaviors interfere not only with academic achievement but also with peer relationships, leading to social as well as academic failure. Some of these students may seek the companionship of the few peers who will accept them—peers who typically behave in similarly inappropriate ways and may introduce one another to drugs, alcohol, or criminal activity (J. Snyder et al., 2008; Webber & Plotts, 2008). Sadly, many youth who have emotional or behavioral disorders do not receive the services and supports that they need. Often boys with externalizing behaviors receive support, but others sometimes do not receive sufficient services (Hallahan, Kauffman, & Pullen, 2015).

## COMMON CHARACTERISTICS

Students with emotional and behavioral disorders differ considerably in their abilities and personalities. However, in addition to the difficulty in maintaining healthy peer relationships just mentioned, you may observe one or more of the following characteristics:

- Frequent absences from school
- Deteriorating academic performance with increasing age



MyEdLab

### Video Example 5.5.

Some students consistently disrupt the classroom environment with inappropriate behavior and have difficulty forming and maintaining peer relationships. Teachers can take steps to help these students learn appropriate behaviors and give them a sense that they have some control over their circumstances.







Report suspicions about child maltreatment immediately to school administrators or child protective services.

- Often, but not always, below-average intelligence
- Low self-esteem
- Aggressive or withdrawn behaviors
- Little or no empathy for others' distress
- Significant substance abuse (Grinberg & McLean-Heywood, 1999; Harter, 1999; Kauffman & Landrum, 2013; Leiter & Johnsen, 1997; McGlynn, 1998; Richards, Symons, Greene, & Szuskiewicz, 1995; Turnbull, Turnbull, & Wehmeyer, 2010; Webber & Plotts, 2008)

Some students with emotional and behavioral disorders have other special needs as well, including learning disabilities, ADHD, or giftedness (Fessler, Rosenberg, & Rosenberg, 1991; Gatzke-Kopp & Beauchaine, 2007; Webber & Plotts, 2008).

### ADAPTING INSTRUCTION

There is promising research indicating that some specific drug treatments are quite helpful to some children and adolescents with emotional and behavioral disorders (Konopasek & Forness, 2014); however, environmental supports are also important. Effective interventions must be tailored to each student's unique needs, but several strategies can benefit many of these students:

-  *Show an interest in students' well-being and personal growth.* A good first step in helping students with emotional and behavioral disorders is simply showing that we care about them (Chang & Davis, 2009; Clarke et al., 1995; Heward, 2009). For example, we can greet them warmly when we see them, express concern when they seem upset or overly stressed, and lend a supportive ear when they want to share their opinions or frustrations. And we can take students' personal interests into account when planning instruction and assignments.
-  *Give students a sense that they have some control over their circumstances.* Some students, especially those who are frequently defiant, often respond to efforts to control them by behaving even *less* appropriately. With such students it's important to avoid power struggles in which only one person wins and the other inevitably loses. Instead, we must create situations in which we ensure that students conform to classroom expectations yet feel that they have some control over what happens to them. For example, we can teach them techniques for observing and monitoring their own actions, with the goal of developing more productive classroom behavior. We can also give them choices, within reasonable limits, about what tasks to accomplish in particular situations (Chang & Davis, 2009; Kern, Dunlap, Childs, & Clark, 1994; Lane, Falk, & Wehby, 2006).
-  *Make sure that students are learning basic skills.* Students with emotional and behavioral disorders often are inattentive and off-task, and thus less engaged with their academic work. Thus, these students may not develop some basic skills (e.g., basic reading or mathematical skills) that are important for all future learning. It is important to identify these disorders early, and to work collaboratively with special educators to meet these students' social and academic needs (Nelson, Benner, & Bohaty, 2014).
-  *Be alert for signs that a student may be contemplating suicide.* In the United States, suicide is the third-leading cause of death for adolescents; occasionally even younger students take their own lives (Goldston et al., 2008; Westefeld et al., 2010). Warning signs include the following:
  - Sudden withdrawal from social relationships
  - Increasing disregard for personal appearance
  - Dramatic personality change (e.g., sudden elevation in mood)
  - Preoccupation with death and morbid themes
  - Overt or veiled threats (e.g., "I won't be around much longer")
  - Actions that indicate putting one's affairs in order (e.g., giving away prized possessions) (Granello & Granello, 2006; Wiles & Bondi, 2001)

As teachers, we must take any of these warning signs seriously and seek help *immediately* from trained professionals, such as school psychologists or counselors.

It's also essential, of course, that we help students with emotional and behavioral disorders acquire more appropriate behaviors. We describe strategies for doing so after the discussion of autism spectrum disorders in the next section.

## AUTISM SPECTRUM DISORDERS

The central, defining features of **autism spectrum disorders** are marked impairments in social cognition (e.g., perspective taking, interpreting other people's body language), social skills, language usage, and social interaction. Many students with these disorders prefer to be alone and form weak, if any, emotional attachments to other people. Some students develop limited abilities to use language, whereas others' language usage is more fully developed. Common, too, are repetitive behaviors (often very odd ones rarely seen in age-mates) and inflexible adherence to certain routines or rituals (American Psychiatric Association, 2000; Lord, 2010; Pelphrey & Carter, 2007; Tager-Flusberg, 2007). Autism spectrum disorders are prevalent; in the United States, an estimated 1 out of every 68 children has been identified as having autism spectrum disorder, with five times as many diagnoses in boys as in girls (Centers for Disease Control, 2014).

Aside from similarities in social impairments and repetitive behaviors, individuals with autism spectrum disorders differ considerably in the severity of their condition—hence the term *spectrum*. In **Asperger syndrome**, a fairly mild form, students usually have normal language skills and average or above-average intelligence. In severe cases, which are often referred to simply as *autism*, children have major delays in cognitive development and language and may exhibit certain bizarre behaviors—perhaps constantly rocking or waving fingers, continually repeating what someone else has said, or showing unusual fascination with a very narrow category of objects (American Psychiatric Association, 2000; Lord, 2010).

The vast majority of autism spectrum disorders are probably caused by abnormalities in the brain. Some researchers have observed abnormalities in *mirror neurons*—neurons that probably underlie people's perspective-taking abilities (Gallese, Gernsbacher, Heyes, Hickok, & Iacoboni, 2011). Other researchers have discovered abnormalities in interconnections among various parts of the brain—for example, in connections between parts that enable logical reasoning or inhibition of impulses, on the one hand, and parts that underlie emotions and emotional processing, on the other (Cherkassky, Kana, Keller, & Just, 2006; I. L. Cohen, 2007; Kana, Keller, Minshew, & Just, 2007). Recent studies suggest that multiple regions of the brain are involved in autism spectrum disorders (Byrnes, 2012). Although some have speculated that autism may be caused by childhood vaccines, there is *no* evidence that there is any association of vaccines with autism (Institute of Medicine, 2011; Maglione et al., 2014). Also, students with autism spectrum disorders may be either undersensitive or oversensitive to environmental stimulation (Ratey, 2001; R. C. Sullivan, 1994; D. Williams, 1996). Temple Grandin, a woman who has gained international prominence as a designer of livestock facilities, recalls what it was like to be a child with autism:

From as far back as I can remember, I always hated to be hugged. I wanted to experience the good feeling of being hugged, but it was just too overwhelming. It was like a great, all-engulfing tidal wave of stimulation, and I reacted like a wild animal. . . . When I was little, loud noises were also a problem, often feeling like a dentist's drill hitting a nerve. They actually caused pain. I was scared to death of balloons popping, because the sound was like an explosion in my ear. (Grandin, 1995, pp. 63, 67)

## COMMON CHARACTERISTICS

In addition to the traits already described, students with autism spectrum disorders may have characteristics such as these:

- Strong visual–spatial thinking skills and exceptional awareness of visual details
- Unusual ability to maintain attention and focus during distractions
- Good memory for a set of unrelated facts
- Difficulty planning and organizing a future course of action
- Strong need for a consistent, predictable environment (I. L. Cohen, 2007; M. Dawson, Soulières, Gernsbacher, & Mottron, 2007; Gernsbacher, Stevenson, Khandakar, & Goldsmith,

Mirror neurons are described in more detail in Chapter 3.

2008; Grandin & Johnson, 2005; Lord, 2010; Meltzer, 2007; Pelphrey & Carter, 2007; Tager-Flusberg, 2007)

Occasionally students with autism exhibit *savant syndrome*, possessing an extraordinary ability (e.g., exceptional mathematical, artistic, or musical talent) that is quite remarkable in contrast to other aspects of their mental functioning (I. L. Cohen, 2007; L. K. Miller, 2005; Treffert & Wallace, 2002).

### ADAPTING INSTRUCTION

Children with Asperger syndrome are typically in general education classes. Students with autism spectrum disorders also can sometimes participate in general education classes for all or part of the day, although inclusion of these students can be complex, so the support of a special educator often may be necessary (Crosland & Dunlap, 2012). As with other exceptionalities, it is important to include parents in discussions about the most appropriate setting for their children. The mother of a first grader with autism, who advocated for her son to be in a classroom that also had non-special-education students, noted that “If he was in a program that was just with other autistic children, there would be no way for him to pick up the behaviors of typically developing children” (Crane, 2010).

Many of the classroom strategies described in earlier sections are applicable for such students. Two additional strategies are helpful as well:

- *Maximize consistency in the classroom layout and weekly schedule.* Many students with autism spectrum disorders feel more comfortable when their environments and schedules are predictable. At the beginning of the school year, then, we should arrange furniture and equipment in ways that will be serviceable throughout the school year, making adjustments later only if absolutely necessary. And to the greatest extent possible, we should schedule recurring activities at the same times each day or on particular days of the week. If the schedule must change for some reason, we should alert students well in advance (Dalrymple, 1995).
- *Use visual approaches to instruction.* Because students with autism spectrum disorders often have strong visual-spatial skills but may have impaired language skills, a heavy emphasis on visual materials may be in order (Ozonoff & Schetter, 2007; C. C. Peterson, 2002; Quill, 1995). We might use objects, pictures, and photographs to convey ideas about academic topics, or we might use some sort of visual cue to signal the start of a new activity.

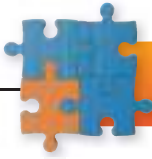
### GENERAL RECOMMENDATIONS

Although the causes of emotional and behavioral disorders and those of autism spectrum disorders are usually quite different, students with these disabilities can benefit from some of the same classroom interventions. Certainly we want to promote success on academic tasks, perhaps by using instructional strategies presented earlier for students with specific cognitive or academic difficulties. Following are additional suggestions:

- *Insist on appropriate classroom behavior.* Although certain students with disabilities may be more prone to counterproductive classroom behaviors than most of their peers, teachers clearly *can* help them behave in productive ways—for instance, by putting reasonable limits on their behavior and imposing consequences when they go beyond those limits (Evertson & Weinstein, 2006; Webber & Plotts, 2008). The *Creating a Productive Classroom Environment* feature “Encouraging Appropriate Behavior in Students with Social or Behavioral Problems” offers several useful strategies.
- *Foster social cognition and effective interpersonal skills.* Students with social or behavioral problems often benefit from training in social cognition and perspective taking. Explicit instruction in and reinforcement of social skills can also be quite powerful. And of course, students need numerous opportunities to *practice* their new skills (e.g., Chan & O’Reilly, 2008; Myles & Simpson, 2001; Nikopoulos & Keenan, 2004; Schrandt, Townsend, & Poulson, 2009; Theimann & Goldstein, 2004).
- *Be persistent, and look for gradual improvement rather than overnight success.* Many students with social or behavioral problems will initially resist our efforts to help them. They may begin to recognize the value of our guidance and support only when they see the natural

You can find strategies for fostering social cognition and perspective taking in Chapter 3.





## Creating a Productive Classroom Environment

### Encouraging Appropriate Behavior in Students with Social or Behavioral Problems

#### ■ Make expectations for behavior clear and specific.

A teacher reminds a student, “You can’t borrow Mary’s bottle of glue without getting her permission. Check with Mary first to make sure it’s all right for you to use her things. If Mary says no, ask someone else.”

#### ■ Specify and follow through on consequences for appropriate and inappropriate behaviors.

A teacher tells a student, “Sam, you know that certain four-letter words, such as the two you just used, are unacceptable in this classroom. You also know the consequence for such behavior, so please go to the time-out corner for 10 minutes.”

#### ■ Give feedback about specific behaviors rather than general areas of performance.

A teacher tells a student, “You did a good job in study hall today. You focused your attention on your homework, and you didn’t retaliate when Jerome accidentally brushed past you on his way to my desk.”

#### ■ Try to anticipate problems and nip them in the bud.

A student has occasional temper tantrums that disrupt the entire class. Although the tantrums seemingly occur at random, his teacher eventually realizes that his ears always turn red just before an outburst. With this knowledge, she can divert the student’s attention to a punching bag whenever a tantrum is imminent, thereby letting him unleash his feelings with only minimal distraction to others.

Sources: Hallahan et al., 2009; Heward, 2009; Myles & Simpson, 2001; Ormrod & McGuire, 2007 (temper tantrum example); Webber & Plotts, 2008.

consequences of their changing behavior—for example, when they start to make new friends or get along better with their teachers. Their progress may be slow, but by focusing on small improvements, we and our students alike can be encouraged by the changes we *do* see, rather than being discouraged by problems that persist.

## Students with General Delays in Cognitive and Social Functioning

When we use the term *student with general delays in cognitive and social functioning*, we’re talking about any student who shows a consistent pattern of developmental delays, regardless of whether the student has been identified as having a disability. Educators sometimes use the term *slow learner* to describe a student who obtains intelligence test scores in the 70s and has noticeable difficulties in most or all parts of the curriculum. A student with especially pronounced difficulties may be identified as having an intellectual disability.

### INTELLECTUAL DISABILITIES

You’re undoubtedly familiar with the term *mental retardation*. In recent years, however, many special educators have instead advocated for the term **intellectual disability** in reference to students who show pronounced delays in most aspects of cognitive and social development. More specifically, students with intellectual disabilities exhibit *both* of the following characteristics (Luckasson et al., 2002):

- *Significantly below-average general intelligence.* These students have intelligence test scores that are quite low—usually no higher than 70, reflecting performance in the bottom 2% of their age-group. In addition, these students learn slowly and show consistently poor achievement in virtually all academic subject areas.
- *Deficits in adaptive behavior.* These students behave in ways that we would expect of much younger children. Their deficits in **adaptive behavior** include limitations in *practical intelligence*—that is, managing the ordinary activities of daily living—and *social intelligence*—that is, conducting themselves appropriately in social situations.

The preceding characteristics must be evident in childhood. Thus, a person who shows them beginning at age 18, perhaps as the result of a serious head injury, would *not* be classified as having an intellectual disability.



### MyEdLab

#### Video Example 5.6.

Students with intellectual disabilities experience difficulties in most or all parts of the curriculum and exhibit deficits in adaptive behavior. Many of these students are sociable and eager to fit in at school.



### MyEdLab

#### Video Example 5.7.

Students with physical or sensory challenges vary in their strengths and limitations. In the general education classroom, teachers build on student strengths and adapt the environment to minimize limitations.

Intellectual disabilities are often caused by genetic conditions. For example, most children with Down syndrome have delayed cognitive and social development. Other cases are due to biological but noninherited causes, such as severe malnutrition or excessive alcohol consumption during the mother's pregnancy or oxygen deprivation during birth. In other situations, environmental factors, such as parental neglect or an extremely impoverished and unstimulating home environment may be at fault (Beirne-Smith, Patton, & Kim, 2006).




## COMMON CHARACTERISTICS

Like students in any category of special needs, students with intellectual disabilities have differing personalities, strengths, and needs. Nevertheless, many of them are apt to exhibit characteristics such as the following:

- Sociability and a genuine desire to belong and fit in at school
- Less general knowledge about the world
- Poor reading and language skills
- Short attention span
- Poor memory; few or no effective learning and memory strategies
- Difficulty drawing inferences and understanding abstract ideas
- Difficulty generalizing something learned in one situation to a new situation
- Immature play behaviors and interpersonal skills
- Delayed motor skills; conditions that adversely affect performance in physical activities (e.g., heart defects, poor muscle tone) (Beirne-Smith et al., 2006; Bergeron & Floyd, 2006; Carlin et al., 2003; Heward, 2009; F. P. Hughes, 1998; Tager-Flusberg & Skwerer, 2007)

## ADAPTING INSTRUCTION

With proper support, many students with mild intellectual disabilities can learn basic skills in reading, writing, and math, perhaps even mastering components of a typical fifth- or sixth-grade curriculum (Hallahan et al., 2009; Heward, 2009). Many special programs also are available for students with mild intellectual disabilities, sometimes involving partnerships with local universities (Nepkin, 2014). Most of the strategies previously described in this chapter can be useful for these students. Here are several additional strategies to keep in mind:

-  *Pace instruction slowly and set short-term goals to ensure success.* When working with a student who has an intellectual disability, we should move through new topics and tasks slowly enough—and with enough support and repetition—that the student can eventually master them. Students with intellectual disabilities typically have a long history of failure at academic tasks. Thus, they need frequent success experiences to learn that, with hard work, they *can* succeed at many tasks. By setting short-term, easy-to-reach goals, students will be more likely to experience success, and be motivated to continue to engage in similar activities (Feuerstein et al., 2010; Fidler, Hepburn, Mankin, & Rogers, 2005; Heward, 2009; Sands & Wehmeyer, 2005).
-  *Provide considerable scaffolding to promote effective cognitive processes and desired behaviors.* We can develop simple study guides that tell students exactly what to focus on as they study. We can be explicit in our directions to perform various tasks—for instance, saying “John, go to the office, give Mrs. Smith the absentee sheet, and come back here.” And we can provide handheld, teacher-programmed prompters—which go by such labels as *visual assistant* and *digital memory aid*—to help students remember the things they need to do (Beirne-Smith et al., 2006; Mastropieri & Scruggs, 1992; Patton et al., 1996, p. 105; Turnbull et al., 2010).
-  *Include vocational and general life skills in the curriculum.* For most students with intellectual disabilities, training in life and work skills is an important part of the high school curriculum. Such training is most likely to be effective when it takes place in realistic settings that closely resemble those in which students will find themselves once they leave school (Beirne-Smith et al., 2006; Turnbull et al., 2010). One successful program provides opportunities for adolescents to learn a variety of farming and farm-related skills. Participants are able to learn about planting, harvesting, and even the retail aspects of farming, including

opportunities to sell produce at the farm's store (Bacon, 2014). The students report that they enjoy these opportunities, and the acquisition of these skills often leads to future employment.

**MyEdLab Application Exercise 5.5.**

In this interactive exercise you can practice identifying teaching strategies that help students with behavioral problems to function effectively and learn in the general education classroom.



## Students with Physical or Sensory Challenges

Some students with special needs have obvious physical disabilities caused by medically detectable physiological conditions. These include physical and health impairments, visual impairments, and hearing loss. A small subset of them have **severe and multiple disabilities** that require significant adaptations and highly specialized services; such students are typically accompanied by child-specific teacher aides or other specialists when attending general education classrooms.

### PHYSICAL AND HEALTH IMPAIRMENTS

**Physical and health impairments** are general physical or medical conditions (usually long term) that interfere with school performance to such a degree that special instruction, curricular materials, equipment, or facilities are necessary. Students in this category may have limited energy and strength, reduced mental alertness, or little muscle control. Examples of conditions that might qualify students for special services are traumatic brain injury, spinal cord injury, cerebral palsy, epilepsy, cancer, and acquired immune deficiency syndrome (AIDS).

### COMMON CHARACTERISTICS


It's hard to generalize about students with physical and health impairments because their conditions are so very different from one another. Nevertheless, several common characteristics are noteworthy:

- Low stamina and a tendency to tire easily
- Varying degrees of intellectual functioning (many of these students have learning ability similar to that of nondisabled peers)
- Lower levels of academic achievement as a result of frequent school absences
- Fewer opportunities to experience and interact with the outside world in educationally important ways (e.g., less use of public transportation, fewer visits to museums and zoos)
- Possible low self-esteem, insecurity, social isolation from peers, or heavy dependence on adults, depending partly on how parents and others have responded to their impairments (Heward, 2009; Patton et al., 1996; J. W. Wood, 1998; Yeo & Sawyer, 2005)

### ADAPTING INSTRUCTION

Although we won't necessarily need to modify the academic curriculum for students with physical and health impairments, we will definitely want to make certain accommodations:

- 🍌 *Be sensitive to specific limitations, and accommodate them flexibly.* One student may require extra time with a writing assignment and perhaps should not be held to the same standards of neatness and legibility. Another may need to respond to test questions orally rather than on paper. Still another might tire easily and need to take frequent breaks.
- 🍌 *Know what to do in emergencies.* A student with acute asthma may have trouble breathing; a student with diabetes may go into insulin shock; a student with epilepsy may have a grand mal seizure; a student who is HIV positive might get a cut and bleed. We should consult with school medical personnel ahead of time so that we are prepared to respond calmly and appropriately in such life- and health-threatening situations.

 *If students and parents give permission, educate classmates about the nature of students' disabilities.* Many children treat peers with physical disabilities kindly and respectfully, but some others do not. Sometimes peers are simply ignorant about the nature of a disability, and giving them accurate information can help them become more accepting and supportive (e.g., R. White & Cunningham, 1991).

## VISUAL IMPAIRMENTS

Students with **visual impairments** have malfunctions of their eyes or optic nerves that prevent normal vision even with corrective lenses. Some students are totally blind, others see only fuzzy patterns of light and dark, and still others have a restricted visual field (*tunnel vision*) that allows them to see just a very small area at a time. Visual impairments are caused by congenital abnormalities in or damage to either the eye or the visual pathway to the brain. Vision is essential to the development of many cognitive abilities, including reading from print, understanding spatial relationships, and comprehension of concepts (Smith, Polloway, Doughty, Patton, & Dowdy, 2016). When students have visual impairments, these abilities may be delayed, and that could affect learning in all academic subjects.


### COMMON CHARACTERISTICS


Students with visual impairments are apt to have many or all of these characteristics:

- Normal functioning of other senses (hearing, touch, etc.)
- General learning ability similar to that of nondisabled students, although visual memory and concept development may be delayed or impaired
- More limited vocabulary, expressive and receptive language, and general world knowledge, in part because of fewer opportunities to experience the outside world in educationally important ways (e.g., less exposure to maps, films, and other visual material)
- Delayed motor development; reduced capability to imitate others' behaviors
- Inability to observe other people's body language and other nonverbal cues, leading to occasional misunderstanding of others' messages and immature social behaviors
- Uncertainty and anxiety (especially in chaotic environments, such as the lunchroom or playground) as a result of having no visual knowledge of ongoing events
- In the primary grades, less knowledge about the conventions of written language (direction of print, punctuation, etc.) (M. Harris, 1992; Heward, 2009; Hobson, 2004; Patton et al., 1996; Smith et al., 2016; Tompkins & McGee, 1986; Turnbull et al., 2010; Tuttle & Tuttle, 1996)

### ADAPTING INSTRUCTION

Specialists typically give students training in Braille, orientation and mobility, and specially adapted computer technology. But general education teachers play important roles as well, as reflected in the following strategies:

 *Orient students ahead of time to the physical layout of the classroom.* Students should have a chance to explore the classroom before other students arrive—ideally, before the first day of class. At that time we can help students locate important objects (e.g., wastebasket and pencil sharpener) and point out special sounds (e.g., the buzzing of a wall clock) to help students get their bearings (J. W. Wood, 1998). We also need to support students when furniture or objects in the classroom are moved to new locations during the school year. Computer-generated virtual environments can now be created and presented to individuals prior to their immersion in a new environment, and the use of such software can improve navigation skills (Connors, Chrastil, Sánchez, & Merabet, 2014).

 *Use visual materials with sharp contrast.* Some students with partial sight can use visual materials with clearly distinguishable features, such as enlarged documents on computer screens and the large-print books available at most libraries. Students' eyes may tire quickly, however, so we should limit use of visual materials to short time periods (Heward, 2009; Patton et al., 1996).

- *Depend heavily on other modalities.* Print-reading computer software and portable print-reading devices easily translate most printed text into spoken language. Many novels, school textbooks, and published curriculum materials are available in Braille, many other books are available in audio form (e.g., see [www.learningally.org](http://www.learningally.org)), and volunteers can sometimes be enlisted to convert still other written materials into Braille or audiotape. We can also conduct hands-on activities involving objects that students can feel and manipulate, and we can involve students in projects that involve oral presentations. For example, we might use plastic relief maps that portray mountains, valleys, and coastlines in three dimensions, perhaps embellishing them with pin pricks to indicate country borders and small dabs of nail polish to indicate major cities.
- *Allow extra time for learning and performance.* Learning by hearing often takes more time than learning by seeing. When students *look* at something, they perceive a great deal of information at once and thus learn many commonplace relationships (e.g., between the sight of a cat and the sound it makes). When they must *listen* to it, however, they receive it sequentially—only one piece at a time—and often without obvious interconnections (Ferrell, 1996; Heward, 2009; M. B. Rowe, 1978).
- *Teach learning strategies to your students.* Visually impaired students in particular can benefit from explicit instruction in various strategies (Smith et al., 2016). Whereas other students can acquire some of these strategies through observation, visually impaired students will need extra support in learning many strategies. In addition, some strategies (e.g., highlighting important text while reading) will not be possible for students with severe visual impairments; nevertheless, alternative strategies often are available. Collaborative partnerships with special educators are particularly beneficial in these situations.

## HEARING LOSS

Students with **hearing loss** have a malfunction of the ears or associated nerves that interferes with the perception of sounds within the frequency range of normal human speech. Two to three of every 1,000 children born in the United States have detectable hearing loss at birth (National Institute on Deafness and Other Communication Disorders, 2014). Students who are completely *deaf* have insufficient sensation to understand any spoken language, even with the help of a hearing aid. Students who are *hard of hearing* understand some speech but experience exceptional difficulty in doing so.

### COMMON CHARACTERISTICS

Most students with hearing loss have normal intellectual abilities (Braden, 1992; Schirmer, 1994). However, they may have characteristics such as these:

- Delayed language development because of reduced exposure to spoken language, especially if the impairment was present at birth or emerged early in life
- Proficiency in sign language, such as American Sign Language (ASL) or finger spelling
- Some ability to read lips (*speechreading*)
- Less oral language than that of hearing classmates; perhaps a monotonous, hollow quality to speech
- Less developed reading skills, especially if language development has been delayed
- Less general world knowledge because of reduced exposure to spoken language
- Some social isolation, more limited social skills, and reduced perspective-taking ability as a result of a reduced ability to communicate (Bassett et al, 1996; Chall, 1996; P. L. Harris, 2006; Heward, 2009; C. C. Peterson, 2002; M. B. Rowe, 1978; Schick, de Villiers, de Villiers, & Hoffmeister, 2007; Turnbull et al., 2010)

### ADAPTING INSTRUCTION

Specialists typically provide training in such communication skills as American Sign Language, finger spelling, and speechreading. With these additions (and possibly some remedial instruction in reading and vocabulary), a normal school curriculum is appropriate for most students with

hearing loss. However, several accommodations can facilitate students' success in general education classrooms:

- *Minimize irrelevant noise.* Even when students can benefit from hearing aids, what they hear is often diminished or distorted; consequently, it's helpful to minimize potentially distracting sounds. For example, carpeting and bulletin boards can absorb some extraneous noise, and fans and pencil sharpeners should be located as far away as possible.
- *Supplement auditory presentations with visual information and hands-on experiences.* We can write important points on the chalkboard, illustrate key ideas with pictures, provide reading materials that duplicate lectures, and ask an aide or student volunteer to take notes on in-class discussions. We can also provide speech-to-text software, which enables students to translate spoken words into written language with reasonable accuracy. And we can use concrete activities (e.g., role-playing historical events) to make abstract ideas more understandable.
- *Communicate in ways that help students hear and speechread.* Students who are hard of hearing are most likely to understand us when we speak in a normal tone of voice (not overly loud) and pronounce words distinctly but otherwise normally. To help students speechread, we should speak only while facing them and never while sitting in a dark corner or standing in front of a window or bright light (Gearheart, Weishahn, & Gearheart, 1992; J. W. Wood, 1998).
- *Teach American Sign Language and finger spelling to classmates.* To facilitate communication with students who have hearing loss, other class members should gain some competence in American Sign Language and finger spelling. One of us authors once taught at a school where *every* student—those with hearing loss and those without—received instruction in signing. One girl in the author's class was totally deaf yet quite popular with her peers, thanks to everyone's ability to communicate easily.

## GENERAL RECOMMENDATIONS

In addition to the strategies just identified for specific physical disabilities, several more general strategies are useful with all students who have physical or sensory challenges:

- *Ensure that all students have access to important educational resources and opportunities.* Such access may involve modifying instructional materials (e.g., obtaining large-print copies of textbooks), adjusting a classroom's physical arrangement (e.g., widening aisles and placing bulletin board displays at eye level to accommodate students in wheelchairs), or making special arrangements that enable students to participate in field trips or sports activities.
- *Provide assistance only when students really need it.* Out of their eagerness to help students with physical and sensory challenges, many adults inadvertently perform tasks and solve problems that these students are perfectly capable of handling on their own. Yet one of our goals for these students should be to promote their independence, not their dependence on others (Wehmeyer et al., 2007).
- *Use assistive technology to facilitate learning and performance.* We've already mentioned the value of print-reading software and speech-to-text software for students with sensory challenges. In addition, some computer printers can create Braille documents, enabling students with visual impairments to read their own class notes and compositions. Specially adapted joysticks and voice recognition systems can supplement or replace computer keyboards for students with limited muscle control. And machines known as augmentative communication devices provide synthesized speech for students incapable of producing normal speech.

### MyEdLab Self-Check 5.4

### MyEdLab Application Exercise 5.6.

In this interactive exercise you can practice identifying adaptations that improve learning for students with sensory challenges and strategies that build on their strengths.



# Students with Advanced Cognitive Development

Many students are apt to have advanced abilities, either in specific subject areas or across the curriculum, that warrant attention and encouragement. Some students—those who are *gifted*—are so far above the norm that special educational services are often appropriate. We often will encounter gifted students in our classes; as we'll see, there are numerous considerations in adapting instruction to engage and challenge gifted students.

## GIFTEDNESS

In general, **giftedness** is unusually high ability or aptitude in one or more areas (e.g., in math, science, creative writing, or music) to such a degree that special educational services are necessary to help the student meet his or her full potential. In most instances giftedness is probably the result of both a genetic predisposition and environmental nurturing (Dai, 2010; Simonton, 2001; Winner, 2000b). In some cases, however, special gifts and talents are largely the result of intensive practice and mentoring (Ericsson, 2003; Gladwell, 2006). The identification of a child as gifted is often a reflection of the values of one's society. Thus, a student who is gifted in sculpting might not be identified as such in a community in which sculpting (or art, more generally) is not valued (Subotnik, Olszewski-Kubilius, & Worrell, 2011).

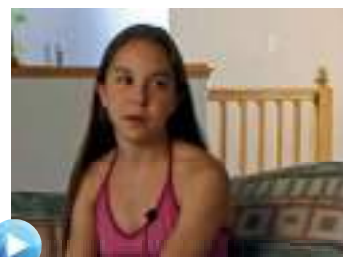
Giftedness is not included in IDEA. In the United States, the Jacob K. Javits Gifted and Talented Student Education Act of 1987 (reauthorized in 1994 and 2001) encourages but doesn't necessarily mandate special educational services for students who are gifted. Many state governments also either encourage or mandate such services. School districts often use multiple criteria—sometimes including intelligence test scores, sometimes not—to identify students who show exceptional promise in general academic ability, specific academic fields, creativity, or the arts. A current debate is whether gifted education should be to develop eminence and talent, or to provide opportunities for students to develop newly emerging talents (Subotnik & Rickoff, 2010).

## COMMON CHARACTERISTICS

Students who are gifted vary considerably in their unique strengths and talents, and those who show exceptional talent in one area may have only average ability in another (Winner, 2000b). Nevertheless, many students who are gifted have characteristics such as these:

- Advanced vocabulary, language, and reading skills
- Extensive general knowledge about the world
- Ability to learn more quickly, easily, and independently than peers
- Advanced and efficient cognitive processes and learning strategies
- Considerable flexibility in ideas and approaches to tasks
- High standards for performance (sometimes to the point of unhealthy perfectionism)
- High motivation to accomplish challenging tasks; boredom during easy tasks
- Strong interest in the area in which strengths have been identified
- Positive self-concept, especially with regard to academic endeavors
- Average or above-average social development and emotional adjustment (although a few extremely gifted students may have difficulties because they are so *very* different from their peers) (Dai, 2010; Mendaglio, 2010; Parker, 1997; Shavinina & Ferrari, 2004; Steiner & Carr, 2003; Subotnik et al., 2011; Subotnik, Olszewski-Kubilius, & Worrell, 2012; Winner, 2000a, 2000b)

To some degree, the nature of giftedness depends somewhat on where students are in their developmental journeys (Dai, 2010; D. J. Matthews, 2009). In the preschool and early elementary years, giftedness might take the form of precociousness in certain general domains; for example, a first grader might be reading sixth-grade-level books or exhibit exceptional facility with numbers. By the upper elementary and secondary grades, some students are likely to show exceptional achievement in very specific areas—perhaps in creative writing, computer technology, or music.



MyEdLab

### Video Example 5.8.

Students with advanced cognitive development vary considerably in their gifts and talents, but they generally have the ability to learn more quickly and independently than peers. They often have high standards for performance and high motivation to accomplish challenging tasks.

From the perspective of Vygotsky's theory (Chapter 2), when gifted students are given the same assignments as their average-ability peers, they're unlikely to be working within their zone of proximal development and therefore are unlikely to make significant cognitive advancements.

Working with a mentor often takes the form of a cognitive apprenticeship (see Chapter 2).

Yet we must keep in mind that students who are gifted may also have one or more disabilities; for instance, they may have dyslexia or Asperger syndrome. In planning instruction for such students, we must address their disabilities as well as their unique gifts.

### ADAPTING INSTRUCTION

Exceptional talents and achievement levels typically require ongoing environmental nurturance and support, in the forms of both differentiated instruction and access to appropriate resources and practice opportunities. Furthermore, many high-achieving students become bored or frustrated when school assignments don't challenge them, and others become so accustomed to the "easy A" that they have trouble coping with the mistakes they're likely to make when they venture into new areas (Dai, 2010; Mendaglio, 2010; Parker, 1997). With such points in mind, we offer the following recommendations:

- *Provide individualized tasks and assignments.* Different students are apt to need special services in very different areas—for example, in math, creative writing, or studio art. Some students who are gifted, especially those with only a limited background in English, may also need training in certain basic skills (C. R. Harris, 1991; Udall, 1989).
- *Form study groups of students with similar interests and abilities.* In some cases a study group might explore a topic in greater depth and with more sophisticated analysis than other students (an *enrichment* approach). In other instances a study group might simply move through the standard school curriculum at a more rapid pace (an *acceleration* approach). Enrichment and acceleration are both beneficial for gifted students, and they are not mutually exclusive—courses can potentially be both accelerated and enriching simultaneously (Rogers, 2002; Subotnik et al., 2011). Students benefit both academically and socially from increased contact with peers who have similar interests and talents (Hattie, 2009; J. A. Kulik & Kulik, 1997; McGinn, Viernstein, & Hogan, 1980).
- *Teach complex cognitive skills within the context of specific subject areas.* Programs designed to enhance students' creativity, critical thinking, or other complex skills separately from specific content domains tend to have only limited impact. Teaching complex thinking skills within the context of specific topics—for example, creativity in writing or reasoning and problem-solving skills in science—is more likely to be effective (Dai, 2010; M. C. Linn, Clement, Pulos, & Sullivan, 1989; Moon, Feldhusen, & Dillon, 1994; Stanley, 1980).
- *Provide opportunities for independent study and service learning projects.* Independent study and community service projects in areas of interest are often beneficial and motivating for high-ability students, provided that they have the work habits, study strategies, and research skills they need to use their time and resources effectively (Candler-Lorven, Tallent-Runnels, Olivárez, & Hildreth, 1994; Terry, 2008). However, even if students are working on projects of this nature, it is important that gifted students have clear goals, and are provided with continuous feedback as they progress toward these goals (Callahan, Moon, Oh, Azano, & Hailey, 2015).
- *Seek outside resources.* When students have high abilities in domains outside our own areas of expertise, it's often helpful to identify suitable mentors elsewhere in the school district or in the community at large—perhaps at a local university, government office, private business, or volunteer community group (Ambrose, Allen, & Huntley, 1994; Piirto, 1999; Seeley, 1989).
- *Keep in mind that students with exceptional cognitive abilities aren't necessarily advanced in other aspects of their development.* Most students with special gifts and talents have the same personal and emotional concerns as their average-ability age-mates (D. J. Matthews, 2009). For example, gifted sixth graders making the transition to middle school are likely to have the typical thoughts and feelings of a young adolescent: whether they'll fit in with a new peer group, whom to sit with at lunch, and so on. They may worry that their peers will see their exceptional ability levels as odd or in some other way unacceptable (Mendaglio, 2010). And they're likely to be surprised or anxious when they discover that they must exert considerable effort to master challenging new skills and that they sometimes make errors in the process (Mendaglio, 2010). For such reasons, high-ability students are likely to need as



much emotional support as their classmates, and they may occasionally need gentle reminders that only new challenges can truly help them grow and that new skills require practice, regardless of innate levels of ability.

#### MyEdLab Self-Check 5.5

**MyEdLab Application Exercise 5.7.** In this interactive exercise you can apply what you have learned about nurturing the development of students who show exceptional gifts and talents.



## Considering Diversity When Identifying and Addressing Special Needs

Sadly, a disproportionately large number of minority-group students are identified as having disabilities, especially specific cognitive disabilities, general intellectual disabilities, and emotional and behavioral disorders (McLoyd, 1998; U.S. Department of Education, 2006; VanTassel-Baska, 2008). Most theorists attribute the differing identification rates to environmental conditions that often accompany low socioeconomic status: higher-than-normal exposure to environmental toxins, poor nutrition, inadequate medical care, limited access to enriching educational resources, and so on (e.g., Dyson, 2008; Jacoby & Glauber, 1995; McLoyd, 1998). Also, English language learners are identified as having learning disabilities or intellectual disabilities more often than native English speakers—a finding that probably reflects students' difficulty in understanding and responding to items on language-based diagnostic tests (A. L. Sullivan, 2008).

The higher-than-average identification rates for minority-group students pose a dilemma for educators. On the one hand, we don't want to assign a label such as *intellectual disability* or *emotional disorder* to students whose classroom performance and behavior may be due largely to their challenging living conditions. On the other hand, we don't want to deprive these students of special educational services that might help them learn and achieve more successfully over the long run. In such situations we must conduct fair and nondiscriminatory evaluations of students' needs, and if students qualify under a special-needs category, we must create IEPs to meet those needs. We should consider these categories of special needs as *temporary* classifications that may no longer be applicable as students' classroom performance improves. *All* students, with and without disability classifications, have changing needs that evolve over time, and federal law requires that IEPs be revisited at least once a year.

In addition to being overrepresented in programs for students with disabilities, members of some minority groups are underrepresented in programs for gifted students (D. Y. Ford, 2012, 2014; Graham, 2009; VanTassel-Baska, 2008). Furthermore, when students from underrepresented groups are identified for participation in gifted education programs, teachers often need to carefully mentor and monitor students to encourage them to remain in these programs (Moore, Ford, & Milner, 2011). On average, students from cultural and ethnic minority groups are at a disadvantage when traditional tests of ability are used to identify giftedness—in some cases because they've had little experience with the kinds of tasks that appear on those tests (Rogoff, 2003). It's critical, then, that we be on the lookout for other signs of giftedness, including the following:

- Exceptional talent in a specific area (e.g., in music or video game design)
- Ability to learn quickly from experiences
- Exceptional communication skills (e.g., articulateness, richness of language)
- Originality and resourcefulness in thinking and problem solving
- Ability to generalize concepts and ideas to new, seemingly unrelated situations (Dai, 2010; Haywood & Lidz, 2007; Winner, 1996)

For the growth of our society over the long run, it's imperative that we nurture the many gifted students in *all* cultural and ethnic groups.



Especially when working with students identified as having cognitive, emotional, or behavioral difficulties, think of their disability labels as *temporary* classifications that may no longer be applicable as classroom performance improves.



Look beyond IQ scores in identifying students who may be gifted; for instance, look for specialized talents, richness of language, an ability to learn new things quickly, and exceptional resourcefulness in solving problems.

## General Recommendations for Working with Students Who Have Special Needs

Although students with special educational needs vary widely in their abilities and disabilities, several recommendations apply across the board:

Chapter 14 and Chapter 15 offer numerous suggestions for accommodating disabilities in assessments.



MyEdLab

### Video Example 5.9.

Students are complex and sometimes bring unique combinations of talents and special needs to the classroom. Teachers must look beyond IQ scores to identify students who may be gifted, and look beyond a student's disability to recognize exceptionality.

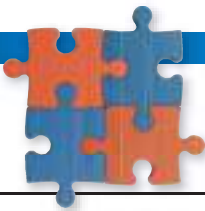
Such choice making can enhance both *self-regulation and autonomy*, discussed in Chapter 10 and Chapter 11, respectively.

- *Be flexible in approaches to instruction and assessment.* Even when students clearly fall within a particular category of special needs, we can't always predict which instructional methods will be most effective for each of them. If we don't succeed with a particular approach, we should try again, but we might also want to try *differently*. Furthermore, we must keep open minds about how we assess students' achievement; depending on the nature of their disabilities, we may need to give them extra time, let them audiotape responses, tailor assessment tasks to an individualized curriculum, and so on (Royer & Randall, 2012).
- *Seek new technologies that can facilitate students' learning and performance.* As we've seen, assistive technology takes a wide variety of forms—spell checkers, handheld prompters, speech-to-text software, and so on—and exciting new technologies emerge every year. Software also is becoming readily available so that students with disabilities can work with technology that is now fairly common in schools, such as iPads (Chai, Vail, & Ayres, 2015). Frequent searches of the Internet can alert us to recent innovations (e.g., search for “assistive technology devices” on Google or Yahoo!).
- *Unless there is reason to do otherwise, hold the same expectations for students with disabilities as for other students.* Sometimes a disability makes it difficult or impossible for students to accomplish certain tasks, and we have to modify our expectations and assessment practices accordingly. Aside from such situations, however, we should generally have the same expectations for students with special needs that we have for other students. Rather than think of reasons that a student *can't* do something, we should think about how we can help the student *do* it. When partnering with a special educator, both the classroom teacher and the special educator need to hold similar high expectations, while simultaneously partnering to provide appropriate supports for the student.
- *Identify and teach the prerequisite knowledge and skills students may not have acquired because of their disabilities.* As either a direct or indirect result of certain disabilities, some students lack the knowledge and skills essential for their school success. For instance, students with visual impairments haven't been able to observe many of the cause-and-effect relationships that form a foundation for learning science—such as the changes in the appearance of wood when it's burned (Ferrell, 1996; M. B. Rowe, 1978). Students also may need assistance using online texts and materials (Greer, Rowland, & Smith, 2014). And students whose medical conditions have limited their contact with peers may have had few opportunities to acquire effective interpersonal skills.
- *Consult and collaborate with specialists.* School districts usually employ a variety of specialists, including special educators, counselors, school psychologists, nurses, speech pathologists, and physical and occupational therapists. Some students leave the classroom for part of the day to work with these individuals. However, in today's inclusive schools many special services are provided within a regular classroom context by teachers and specialists working in close collaboration.
- *Communicate regularly with parents.* In accordance with IDEA, parents are part of the multidisciplinary team that determines the most appropriate program for a student with special needs. Parents can often tell us what works and what doesn't, and they can alert us to certain conditions or events at home that may trigger problem behaviors in class. Furthermore, we can bring about desired behavioral changes more effectively if the same expectations for behavior exist both at school and at home.
- *Include students in planning and decision making.* Programs for most students with special needs—especially those with disabilities—are so highly structured that students have little say regarding what and how they learn. But increasingly, educators are recognizing the importance of letting *all* students make some choices about their academic goals and curriculum (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Prout, 2009; Wehmeyer et al., 2007).

Keep your eyes open for students who may qualify for special services. The more we work with students in a particular age-group, the more we learn about their age-typical abilities and behaviors. Hence, we teachers are in an excellent position to identify children who in one way or another are *not* typical. Although specialists usually conduct the in-depth assessments necessary to identify particular special needs, the job of referring students for such assessments—and thereby gaining them access to the specialized services they may need—is ultimately up to teachers in general education classrooms.

Work with your other students toward acceptance and support of students with special needs. As we've already noted elsewhere in the chapter, many students with disabilities have trouble being accepted by and developing friendships with peers in their classes (de Boer, Pijl, Post, & Minnaert, 2013). As teachers, having a student with any type of exceptionality in our classroom is a wonderful opportunity for our other students. When a child or adolescent learns about various disabilities firsthand, and learns to respect and value these differences, such respect may last a lifetime.

## 5



## What Have You Learned?

Let's now review key points related to each of the chapter's learning outcomes.

- **5.1: Describe various perspectives on the nature of intelligence, and identify several ways in which you can nurture intelligence in your own students.** Intelligence involves the ability to apply prior knowledge and experiences flexibly to accomplish challenging tasks; it's apt to manifest itself differently in different cultures. Some psychologists believe that intelligence is a single, biology-based entity that influences students' learning and performance across a wide variety of tasks and subject areas—a belief that's reflected in the use of IQ scores as general estimates of cognitive ability. Others disagree, proposing that intelligence consists of a number of somewhat independent abilities or, instead, that intelligent behavior varies considerably depending on a child's age and environmental support systems. As teachers, we must remember that human intelligence can and does change over time, especially with appropriate instruction and practice opportunities.
- **5.2: Explain how students' cognitive styles and dispositions might influence their classroom performance.** *Cognitive styles* and *dispositions* are general inclinations to approach tasks in particular ways—for instance, to think analytically or holistically or to approach new ideas in an open-minded or close-minded manner. We can encourage productive styles and dispositions through the messages we give about classroom subject matter (e.g., “Does the evidence support what scientists are saying about this topic?”) and by modeling curiosity and enthusiasm for learning.
- **5.3: Identify implications of the U.S. Individuals with Disabilities Education Act (IDEA) for your own work as a teacher.** Students with special needs are those students who are different enough from their classmates that they require

specially adapted instructional materials and practices to help them maximize their cognitive and social development. Increasingly, students with special needs are being educated in general education classrooms for part or all of the school day; in the United States, such *inclusion* is in part the result of a mandate of the Individuals with Disabilities Education Act (IDEA). Students with special needs are most likely to flourish in general education settings when instruction and materials are individualized to address any missing basic skills but also present challenges that spur developmental advancements.

- **5.4: Explain how you might adapt your instruction and classroom practices to the unique strengths and limitations of students with various disabilities.** Students with specific cognitive or academic difficulties include those with learning disabilities, those with attention-deficit hyperactivity disorder (ADHD), and those with speech and communication disorders. Many instructional strategies must be tailored to students' specific difficulty areas, but some strategies are widely applicable; for instance, virtually all of these students benefit from early interventions, clear expectations for performance, and feedback that documents ongoing progress.

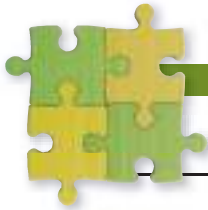
Students with social or behavioral problems include those with emotional and behavioral disorders (which might involve either externalizing or internalizing behaviors) and those with autism spectrum disorders. Many students with these disabilities benefit from training in interpersonal skills. They may also perform more successfully in a structured environment in which appropriate behaviors are clearly identified and consequences for desired and undesired behaviors are consistently administered.

Some students have general delays in cognitive and social functioning, and some of these students are formally diagnosed as having an intellectual disability. Effective instruction

for these students usually involves a slow pace with considerable scaffolding and, eventually, explicit training in vocational and general life skills.

Students with physical and sensory challenges include those with physical and health impairments (conditions that result in reduced energy, alertness, or muscle control), visual impairments, or hearing loss. Although recommended instructional strategies vary considerably depending on students' specific disabilities, all of these students should have appropriate assistive technologies and access to the same educational resources and opportunities as their nondisabled peers.

■ **5.5: Explain how you might nurture the development of students who show exceptional gifts and talents.** Most students identified as gifted require individualized instruction that challenges them to stretch their existing abilities in new directions. We must be open-minded about how we identify such students, as giftedness may take different forms in different cultural and ethnic groups. Strategies for promoting the achievement of gifted students include forming small study groups on specific topics, teaching complex cognitive skills within the context of various academic subject areas, and providing opportunities for independent study and service learning either within or outside of school walls.



## Practice for Your Licensure Exam

### A Different Megan

Megan recently started the first grade at a new school. Her teacher, Ms. Bailey, has noticed that Megan is fidgety and has trouble concentrating and completing some of the tasks assigned. Megan loves working on puzzles and arts and crafts. Ms. Bailey has also observed that Megan becomes disruptive during reading lessons, and this is affecting the rest of the class. A meeting was held with Megan's parents, and Ms. Bailey found out that Megan's mother had recently started traveling a lot for work and was therefore often not available to help Megan with her studies. Megan's father did not complete formal schooling, and although he was never officially diagnosed, he believes he has a learning disability. Ms. Bailey informed the parents that Megan often complains about how hard reading is; that she has not made a close friend yet and sometimes spends breaks alone; that she cannot write simple words other than her name; and that she can become bossy and demanding when faced with a reading or writing task but at other times is very sweet and friendly. Her parents are worried because this behavior was very unlike Megan, who had been popular at her old school and had

always received positive comments from her previous teacher. Taking into account her own observations and the information gathered from Megan's parents, Ms. Bailey decides to formally request the school psychologist to conduct an in-depth evaluation of Megan's abilities and behavior.

**1. Multiple-choice question:**

What is the least likely cause of Megan's behavior?

- A learning disability
- An emotional and behavioral disorder
- Emotional immaturity and acting out
- Adjustment to the new environment

**2. Constructed-response question:**

Megan's evaluation will probably take several weeks to complete. In the meantime, what strategies can Ms. Bailey use to improve Megan's behavior and performance in the classroom? Describe at least three different things that she can do.

MyEdLab Licensure Exam 5.1

**PRAXIS** Go to Appendix C, "Matching Book Content to the Praxis Principles of Learning and Teaching Tests," to discover sections of this chapter that may be especially applicable to the Praxis tests.