

# A Topical Approach to Life-Span Development

**SECOND EDITION**

**John W. Santrock**

*University of Texas at Dallas*



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### A TOPICAL APPROACH TO LIFE-SPAN DEVELOPMENT

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*With special appreciation to my wife  
Mary Jo*

# About the Author

## John W. Santrock

John Santrock received his Ph.D. from the University of Minnesota in 1973. He taught at the University of Charleston and the University of Georgia before joining the Program in Psychology and Human Development at the University of Texas at Dallas, where he currently teaches a number of undergraduate courses. In 1982, John created the life-span development course at UT-Dallas and has taught it every year since then.

John has been a member of the editorial boards of *Child Development* and *Development Psychology*. His research on father custody is widely cited and used in expert witness testimony to promote flexibility and alternative considerations in custody disputes. John also has authored these exceptional McGraw-Hill texts: *Psychology* (7th edition), *Child Development* (10th edition), *Children* (7th edition), *Adolescence* (10th edition), *Life-Span Development*, (9th edition), and *Educational Psychology* (2nd edition).

For many years, John was involved in tennis as a player, teaching professional, and coach of professional tennis players. He has been married for more than 35 years to his wife, Mary Jo, who is a Realtor. He has two daughters—Tracy, who is a technology specialist at Nortel in Raleigh, North Carolina, and Jennifer, who is a medical sales specialist for Medtronic in San Antonio. He has one granddaughter, Jordan, age 12. Tracy recently completed the Boston Marathon, and Jennifer was in the top 100 ranked players on the Women's Professional Tennis Tour. In the last decade, John also has spent time painting expressionist art.



# Brief Contents

## **SECTION 1**

### The Life-Span Perspective 3

- 1** Introduction 5

## **SECTION 2**

### Biological Processes, Physical Development, and Health 47

- 2** Biological Beginnings 48
- 3** Physical Development and Biological Aging 92
- 4** Health 130
- 5** Motor, Sensory, and Perceptual Development 164

## **SECTION 3**

### Cognitive Processes and Development 197

- 6** Cognitive Developmental Approaches 198
- 7** Information Processing 230
- 8** Intelligence 268
- 9** Language Development 302

## **SECTION 4**

### Socioemotional Processes and Development 329

- 10** Emotional Development 330
- 11** The Self, Identity, and Personality 366
- 12** Gender and Sexuality 400
- 13** Moral Development, Values, and Religion 440

## **SECTION 5**

### Social Contexts of Development 479

- 14** Families, Lifestyles, and Parenting 480
- 15** Peers and the Sociocultural World 520
- 16** Schools, Achievement, and Work 558

## **SECTION 6**

### Endings 599

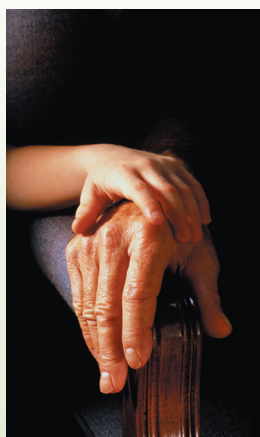
- 17** Death and Grieving 600

# Contents

Preface xii

## SECTION 1 The Life-Span Perspective 3

### CHAPTER 1



#### Introduction 5

##### The Life-Span Perspective 6

The Importance of Studying Life-Span Development 6

The Historical Perspective 7

##### Applications in Life-Span Development

*Family Policy* 8

Characteristics of the Life-Span Perspective 10

##### The Nature of Development 12

Biological, Cognitive, and Socioemotional Processes 12

Periods of Development 13

Conceptions of Age 15

Developmental Issues 15

##### Theories of Development 18

Psychoanalytic Theories 19

Cognitive Theories 22

Behavioral and Social Cognitive Theories 24

Ethological Theory 25

Ecological Theory 27

##### Contexts of Life-Span Development

*Individual, Family, and Extrafamilial Contexts* 29

An Eclectic Orientation 30

##### Research in Life-Span Development 32

Methods for Collecting Data 32

Research Designs 35

Time Span of Research 37

##### Research in Life-Span Development

*Research Journals* 39

Ethics 40

##### Reach Your Learning Goals 42

## SECTION 2 Biological Processes, Physical Development, and Health 47

### CHAPTER 2



#### Biological Beginnings 48

##### The Evolutionary Perspective 50

Natural Selection and Adaptive Behavior 50

Evolutionary Psychology 50

##### Genetic Foundations 53

The Genetic Process 53

Genetic Principles 56

Chromosome and Gene-Linked Abnormalities 58

##### Heredity, Environment, and Individual Differences 61

Behavior Genetics 62

Heredity-Environment Correlations 62

Shared and Nonshared Environmental Experiences 63

The Epigenetic View 64

Conclusions About Heredity-Environment

Interaction 64

##### Prenatal Development 65

The Course of Prenatal Development 66

##### Contexts of Life-Span Development *Cultural*

*Beliefs About Pregnancy* 68

Prenatal Diagnostic Tests 69

Teratogens and the Prenatal Environment 70

##### Applications in Life-Span Development

*Prenatal Care and Classes* 78

##### Birth 79

The Process of Birth 79

Strategies for Childbirth 80

Neonatal Health and Responsiveness 82

##### Research in Life-Span Development *Tiffany*

*Field's Research on Massage Therapy* 84

Bonding 86

##### Reach Your Learning Goals 88

**CHAPTER 3**



**Physical Development and Biological Aging 92**

**Body Growth and Change 94**

- Patterns of Growth 94
- Height and Weight in Infancy and Childhood 94
- Puberty 96

**Applications in Life-Span Development**

*Pubertal Timing and Health Care 101*

- Early Adulthood 101
- Middle Adulthood 102
- Late Adulthood 103

**The Brain 104**

- Brain Physiology 105
- Infancy 106

**Research in Life-Span Development *Studying***

*Babies' Brains 108*

- Childhood 110

- Adolescence 111
- Adulthood and Aging 112

**Sleep 115**

- Infancy 115
- Childhood 117
- Adolescence 118
- Adulthood and Aging 118

**Longevity 119**

- Life Expectancy and Life Span 119
- Contexts of Life-Span Development *Living***
- Longer in Okinawa 122*
- The Young-Old, the Old-Old, and the Oldest-Old 123
- Biological Theories of Aging 123

**Reach Your Learning Goals 126**

**CHAPTER 4**



**Health 130**

**Health, Illness, and Disease 132**

- The Bio-Psycho-Social Health Model 132
- Children's Health 133

**Contexts of Life-Span Development *A Healthy***

*Start 134*

- Adolescents' Health 135
- Young Adults' Health 136

**Applications in Life-Span Development**

*Gender, Health, and the Health-Care System 137*

- Health and Aging 138

**Research in Life-Span Development *Giving***

*Options for Control and Teaching Coping Skills 141*

**Nutrition and Eating Behavior 142**

- Infancy 142

- Childhood 145
- Adolescence 146
- Adult Development and Aging 148

**Exercise 151**

- Childhood and Adolescence 151
- Adulthood 152
- Aging and Longevity 153

**Substance Use and Addiction 154**

- Drugs, Health, and Addiction 154
- Substance Abuse in Adolescence 156
- Substance Abuse in Adulthood 158

**Reach Your Learning Goals 160**

**CHAPTER 5**



**Motor, Sensory, and Perceptual Development 164**

**Motor Development 166**

- The Dynamic Systems View 166
- Reflexes 167
- Gross Motor Skills 168

**Contexts of Life-Span Development *Cultural***

*Variations in Guiding Infants' Motor Development 171*

**Applications in Life-Span Development**

*Parents and Children's Sports 173*

- Fine Motor Skills 174
- Handedness 176

**Sensory and Perceptual Development 178**

- What Are Sensation and Perception? 178
- The Ecological View 178
- Research in Life-Span Development *Studying***
- the Newborn's Perception 179*
- Vision 181
- Hearing 186
- Other Senses 188
- Intermodal Perception 190

**Perceptual-Motor Coupling 191**

**Reach Your Learning Goals 192**

## SECTION 3 Cognitive Processes and Development 197

### CHAPTER 6



### Cognitive Developmental Approaches 198

#### Piaget's Theory of Cognitive Development 200

- Processes of Development 200
- Sensorimotor Stage 202

#### Research in Life-Span Development *Object*

- Permanence and Causality* 205
- Preoperational Stage 207
- Concrete Operational Stage 211

#### Contexts of Life-Span Development

- Conservation Skills Around the World* 212
- Formal Operational Stage 213

#### Applying and Evaluating Piaget's Theory 215

- Piaget and Education 215
- Evaluating Piaget's Theory 216

#### Vygotsky's Theory of Cognitive Development 218

- The Zone of Proximal Development 218

Scaffolding 219

Language and Thought 220

Teaching Strategies 220

#### Applications in Life-Span Development

- Apprenticeship Thinking* 221
- Evaluating Vygotsky's Theory 222

#### Cognitive Changes in Adulthood 224

- Piaget's View 224
- Realistic and Pragmatic Thinking 224
- Reflective and Relativistic Thinking 224
- Is There a Fifth, Postformal Stage? 225

#### Reach Your Learning Goals 226

### CHAPTER 7



### Information Processing 230

#### The Information-Processing Approach 232

- What Is the Information-Processing Approach? 232
- The Information-Processing Approach to Development 233
- Speed of Processing Information 235

#### Attention 236

- What Is Attention? 237
- Infancy 237
- Childhood and Adolescence 237
- Adulthood 238

#### Memory 239

- What Is Memory? 239

#### Contexts of Life-Span Development *Culture,*

- Gender, and Memory* 241
- Infancy 242
- Childhood 243
- Adolescence 246
- Adulthood 246

#### Research in Life-Span Development *How Well*

- Do Adults Remember What They Learned in High School and College Spanish?* 249

#### Thinking 252

- What Is Thinking? 252
- Childhood 252

#### Applications in Life-Span Development

- Fostering a Community of Learners* 253
- Adolescence 258
- Adulthood 259

#### Metacognition 261

- What Is Metacognition? 261
- The Young Child's Theory of Mind 261
- Metamemory in Children 262
- Metacognition in Adolescence and Adulthood 262

#### Reach Your Learning Goals 264

**CHAPTER 8**



**Intelligence 268**

**The Concept of Intelligence 270**

- What Is Intelligence? 270
- Intelligence Tests 270
- Theories of Multiple Intelligences 274

**Applications in Life-Span Development**

*Project Spectrum 276*

**Controversies and Group Comparisons 279**

- The Influence of Heredity and Environment 279

**Research in Life-Span Development** *The*

*Abecedarian Project 283*

Group Comparisons and Issues 283

**Contexts of Life-Span Development** *Larry P.:*

*Intelligent, But Not on Intelligence Tests 284*

**The Development of Intelligence 287**

- Tests of Infant Intelligence 287
- Stability and Change in Intelligence Through Adolescence 288
- Intelligence in Adulthood 288

**The Extremes of Intelligence and Creativity 291**

- Mental Retardation 291
- Giftedness 292
- Creativity 293

**Reach Your Learning Goals 298**

**CHAPTER 9**



**Language Development 302**

**What Is Language? 304**

- Defining Language 304
- Language's Rule Systems 304

**How Language Develops 307**

- Infancy 307
- Early Childhood 309

**Research in Life-Span Development** *Family*

*Environment and Young Children's Language Development 311*

Middle and Late Childhood 313

**Contexts of Life-Span Development** *Bilingual*

*Education 317*

Adolescence 317

Adulthood 318

**Biological and Environmental Influences 318**

- Biological Influences 319
- Behavioral and Environmental Influences 320

**Applications in Life-Span Development** *How*

*Parents Can Facilitate Infants' and Toddlers'*

*Language Development 322*

An Interactionist View of Language 323

**Reach Your Learning Goals 324**

**SECTION 4 Socioemotional Processes and Development 329**

**CHAPTER 10**



**Emotional Development 330**

**Exploring Emotion 332**

- What Are Emotions? 332
- A Functionalist View of Emotion 333
- Regulation of Emotion 333
- Emotional Competence 334

**Development of Emotion 335**

- Infancy 336
- Early Childhood 339
- Middle and Late Childhood 340
- Adolescence 341
- Adulthood 341

**Temperament 343**

- Describing and Classifying Temperament 344
- Biological Foundations and Experience 344

Goodness of Fit 346

Parenting and the Child's Temperament 347

**Applications in Life-Span Development**

*Temperament and Adaptive Parenting 347*

**Attachment and Love 348**

Infancy and Childhood 348

**Research in Life-Span Development** *A*

*National Longitudinal Study of Child Care 354*

Adolescence 355

Adulthood 358

**Contexts of Life-Span Development** *Love and*

*Marriage in the United States and Japan 360*

**Reach Your Learning Goals 362**



**CHAPTER 11**



**The Self, Identity, and Personality 366**

**The Self 368**

Self-Understanding 368

**Contexts of Life-Span Development** *Multiple*

*Selves and Sociocultural Contexts 372*

Self-Esteem and Self-Concept 374

Self-Regulation 377

**Applications in Life-Span Development**

*Engaging in Self-Regulation 378*

**Identity 382**

Erikson's Ideas on Identity 382

Identity's Components 383

Contemporary Views of Identity 383

Identity Statuses 384

Family Influences 385

Culture and Ethnicity 386

**Personality 387**

Trait Theories and the Big Five Factors of Personality 388

Views on Adult Development 389

Generativity 392

Stability and Change 392

**Research in Life-Span Development** *Age*

*Differences in Adult Personality Across*

*Cultures 393*

**Reach Your Learning Goals 396**

**CHAPTER 12**



**Gender and Sexuality 400**

**Biological, Social, and Cognitive Influences on Gender 402**

Biological Influences 402

Social Influences 404

Cognitive Influences 405

**Gender Comparisons and Classifications 407**

Gender Stereotyping 407

**Research in Life-Span Development** *Reducing*

*Children's Gender Stereotyping 408*

Gender Similarities and Differences 408

Masculinity, Femininity, and Androgyny 411

**Gender Development through the Life Span 412**

Childhood 412

Adolescence 413

Adulthood and Aging 414

**Contexts of Life-Span Development** *Being*

*Female, Ethnic, and Old 417*

**Exploring Sexuality 418**

Biological and Cultural Factors 418

Sexual Orientation 419

Sexually Transmitted Infections 422

Forcible Sexual Behavior and Sexual Harassment 424

**Sexuality Through the Life Span 427**

Child Sexuality 427

Adolescent Sexuality 427

**Applications in Life-Span Development**

*Adolescent Sexuality and Education 433*

Sexuality and Aging 433

**Reach Your Learning Goals 436**

**CHAPTER 13**



**Moral Development, Values, and Religion 440**

**Domains of Moral Development 442**

What Is Moral Development? 442

Moral Thought 442

**Contexts of Life-Span Development** *Moral*

*Reasoning in the United States and India 448*

Moral Behavior 450

Moral Feeling 451

**Contexts of Moral Development 454**

Parenting 454

Schools 455

**Prosocial and Antisocial Behavior 457**

Prosocial Behavior 458

**Research in Life-Span Development** *The*

*Consistency and Development of Prosocial Behavior 459*

Antisocial Behavior 460

**Applications in Life-Span Development**

*Reducing Youth Violence 460*

**Values, Religion, Spirituality, and Meaning in Life 464**

Values 465

Stages of Religious Thought 466

Religion and Spirituality in Adolescence and Adulthood 468

Meaning in Life 472

**Reach Your Learning Goals 474**

## SECTION 5 Social Contexts of Development 479

### CHAPTER 14



### Families, Lifestyles, and Parenting 480

#### Analyzing Family Life 482

The Family Life Cycle 482

Family Processes 483

#### The Diversity of Adult Lifestyles 486

Single Adults 486

Cohabiting Adults 487

Married Adults 488

#### Contexts of Life-Span Development *Marriage*

*Around the World* 489

Divorced Adults 492

Remarried Adults 494

Gay and Lesbian Adults 494

#### Parenting 495

Parental Roles 495

Parenting Styles and Discipline 497

Parent-Adolescent Relationships 502

Working Parents 505

Effects of Divorce on Children 506

#### Applications in Life-Span Development

*Communicating with Children About*

*Divorce* 507

Stepfamilies 508

#### Research in Life-Span Development *Family*

*Functioning and Adolescent Adjustment in*

*Stepfamilies* 509

#### Other Family Relationships 510

Sibling Relationships and Birth Order 510

Grandparenting 511

Intergenerational Relationships 513

#### Reach Your Learning Goals 516

### CHAPTER 15



### Peers and the Sociocultural World 520

#### Peer Relations in Childhood and Adolescence 522

Functions of Peer Groups 522

Adult-Child and Peer Relations 523

Developmental Changes 523

Social Cognition 523

Peer Statuses 525

Bullying 526

Gender and Peer Relations 527

Adolescent Peer Relations 527

#### Contexts of Life-Span Development *Cross-*

*Cultural Comparisons of Peer Relations* 529

#### Friendship 530

Functions of Friendship 530

Friendship During Childhood 530

Friendship During Adolescence 531

Adult Friendship 532

#### Play and Leisure 534

Childhood 534

Adolescence 536

Adulthood 537

#### Aging and the Social World 538

Social Theories of Aging 538

Stereotyping of Older Adults 539

Social Support and Social Integration 540

#### Research in Life-Span Development *The Stress*

*of Caring for Older Adults* 540

Successful Aging 541

#### Sociocultural Influences 541

Culture 542

Socioeconomic Status and Poverty 544

Ethnicity 547

#### Applications in Life-Span Development

*Acculturation and Ethnic Minority*

*Parenting* 551

#### Reach Your Learning Goals 554

**CHAPTER 16**



**Schools, Achievement, and Work 558**

**Schools 560**

Contemporary Approaches to Student Learning and Assessment 560

Schools and Developmental Status 562

**Applications in Life-Span Development**

*Reggio Emilia's Children* 565

**Contexts of Life-Span Development** *Cross-*

*Cultural Comparisons of Secondary Schools* 570

Educating Children with Disabilities 572

Socioeconomic Status and Ethnicity in

Schools 576

**Achievement 578**

Extrinsic and Intrinsic Motivation 579

Mastery Motivation 580

Attribution 581

Self-Efficacy 581

Goal-Setting, Planning, and

Self-Monitoring 582

Ethnicity and Culture 583

**Research in Life-Span Development** *Cross-*

*Cultural Comparisons in Learning Math and*

*Math Instruction* 584

**Careers, Work, and Retirement 585**

Career Development 585

Work 587

Retirement 592

**Reach Your Learning Goals 594**

**SECTION 6 Endings 599**

**CHAPTER 17**



**Death and Grieving 600**

**Defining Death and Life/Death Issues 602**

Issues in Determining Death 602

Decisions Regarding Life, Death, and Health

Care 602

**Death and Cultural Contexts 605**

Changing Historical Circumstances 605

Death in Different Cultures 605

**A Developmental Perspective on Death 607**

Causes of Death 607

Attitudes Toward Death at Different Points in

the Life Span 607

Suicide 609

**Facing One's Own Death 611**

Kübler-Ross's Stages of Dying 612

Perceived Control and Denial 613

The Contexts in Which People Die 613

**Coping with the Death of Someone Else 614**

Communicating with a Dying Person 614

**Applications in Life-Span Development**

*Communicating with a Dying Person* 615

Grieving 615

Making Sense of the World 617

Losing a Life Partner 618

**Research in Life-Span Development** *A*

*Longitudinal Study of Marital Quality and*

*Adjustment to Widowhood* 619

Forms of Mourning 619

**Contexts of Life-Span Development** *The*

*Amish, Traditional Judaism, and*

*Mourning* 620

**Reach Your Learning Goals 622**

**Appendix: Careers in Life-Span Development A-1**

**Glossary G-1**

**References R-1**

**Credits C-1**

**Name Index NI-1**

**Subject Index SI-1**

# Preface

It is gratifying that the first edition of *A Topical Approach to Life-Span Development* was so well received. This is reflected in the positive comments of instructors who have adopted the book, reviewers, and students who have used the book.

Most textbooks on life-span development are chronologically organized. Why present life-span development topically? In a topical approach, students can see the processes involved in a particular aspect of development in a single chapter and often in a particular part of a chapter. In contrast, in a chronologically organized textbook, a topic such as the development of the brain appears in a number of chapters—typically early in the book in an infancy chapter, later in a childhood chapter, and then again toward the end of the book in an aging chapter. Examining life-span development topically allows developmental changes through the life span to be described in close proximity to one another, which let students make better connections between them.

*A Topical Approach to Life-Span Development, second edition*, is not just an age-stage chronological-within-a-topical-organization text. Where key chronological, sequential changes take place, they are emphasized. The focus, though, is mainly on the processes of development, how these processes function, and how they change developmentally throughout the life span.

In the first edition of the book, three main themes were emphasized: research, applications, and contexts. I believe it is important for students to have a firm grasp of the research foundation of the field. I also think that students benefit from knowing how information can be applied to people's lives. Further, I believe students benefit from learning about contextual variations in life-span development, especially those that involve culture, ethnicity, and gender. These themes are woven throughout the book and each chapter has three interludes that focus on an aspect of research, applications, and contexts related to a chapter topic. These three themes—research, applications, and contexts—continue as important themes in the second edition of *A Topical Approach to Life-Span Development*.

What is new in the second edition of the book? The revision focuses on these main areas that reviewers and adopters told me to emphasize more:

- Research and content
- Applications and contexts
- Accessibility and interest

First, I will describe the thrust of these changes in general terms and then provide a list of detailed chapter-by-chapter changes.

## RESEARCH AND CONTENT

Above all, a topical life-span development text must have a solid research foundation. This new edition has a more extensive research orientation than the first edition and includes the latest, most contemporary research.

### Research Citations

*A Topical Approach to Life-Span Development, second edition*, has more than 1,200 citations from 2000–2004, making it truly a twenty-first century rendition of the field of life-span development.

### Research Presentation, Depth, and Figures

Reviewers recommended that I include more depth in research descriptions and more graphs of data to show how researchers visually present their data. I took this recommendation to heart. A number of research studies are described in greater depth to show students how research is conducted. The second edition has more than 60 new research figures, many of which illustrate the results of research studies. Special care was taken to make sure these illustrations were clearly designed so that students can interpret and understand them. An example of the increased emphasis on depth of research description and visual presentation of data is Alan Slater's research on habituation and dishabituation in chapter 7, "Information Processing." Another example is the research of Carol Ryff on age and well-being in chapter 11, "The Self, Identity, and Personality."

### Content

Many new content areas have been added and many others updated and expanded. Among the content improvements are new material on evolutionary developmental psychology (Bjorklund & Pellegrini, 2002) (chapter 2), the collaborative gene (Gottlieb, 2002) (chapter 2), brain lateralization in older adults (chapter 3), developmental changes in attention (chapter 7), emotions in adolescence (Rosenblum & Lewis, 2003) (chapter 10), personal control (Heckhausen, 2002) (chapter 11), meaning in life (Baumeister & Voh, 2002) (chapter 13), step-families (Hetherington & Stanley-Hagan, 2002) (chapter 14), gender and peer relations (Maccoby, 2002) (chapter 15), and work during adolescence (chapter 16).

## Research in Life-Span Development Interludes

A Research in Life-Span Development interlude appears in each chapter. The research interludes provide an in-depth look at research on a topic related to the chapter's content. Among the new, revised, and updated Research in Life-Span Development interludes are Studying the Newborn's Perception (chapter 5), Object Permanence and Causality (chapter 6), and Family Environment and Young Children's Language Development (chapter 9).

## Expert Research Consultants

Life-span development has become an enormous, complex field and no single author, or even several authors, can possibly be an expert in many different areas of life-span development. To solve this problem, I have sought the input of leading experts in many different research areas of life-span development. The experts provided me with detailed evaluations and recommendations for a chapter(s) in their area(s) of expertise. The expert research consultants for *A Topical Approach to Life-Span Development, second edition* are:

### Pamela Balls Organista

*University of San Francisco*

Ethnicity and culture throughout the text

### Gilbert Gottlieb

*University of North Carolina–*

*Chapel Hill*

Chapter 2: Biological Beginnings

### Linda Mayes

*Yale University*

Chapter 2: Biological Beginnings

### James Birren

*UCLA*

Chapter 3: Physical Development and Biological Aging and

Chapter 4: Health

### Rachel Keen

*University of Massachusetts*

Chapter 5: Motor, Sensory, and Perceptual Development

### Jonathan Tudge

*University of North Carolina at Greensboro*

Chapter 6: Cognitive Developmental Approaches

### William Hoyer

*Syracuse University*

Chapter 7: Information Processing; and Chapter 8: Intelligence

### Elena Grigorenko

*Yale University*

Chapter 8: Intelligence

### Jay Belsky

*University of London*

Chapter 10: Emotional Development; and Chapter 14:

Families, Lifestyles, and Parenting

### Daniel Mroczek

*Fordham University*

Chapter 10: Emotional Development

### James Marcia

*Simon Fraser University*

Chapter 11: The Self, Identity, and Personality

### Janet Shibley Hyde

*University of Wisconsin*

Chapter 12: Gender and Sexuality

### James Garbarino

*Boston College*

Chapter 13: Moral Development, Values, and Religion

### Linda George

*Duke University*

Chapter 15: Peers and the Sociocultural World

### Allan Wigfield

*University of Maryland*

Chapter 16: Schools, Achievement, and Work

### Robert Kastenbaum

*Arizona State University*

Chapter 17: Death and Grieving

The photographs and biographies of the expert consultants appear later in the Preface.

## APPLICATIONS AND CONTEXTS

It is not only important to present the scientific foundations of life-span development to students, but also to describe real-world applications and the contexts of development.

### Applications

There is increasing interest in the real-world applications of research and these are highlighted in this text. Every effort has been made to give applied examples of concepts and to give students a sense that the field of life-span development has personal meaning for them. Applications are woven throughout each of the book's chapters and also are emphasized in an Applications in Life-Span Development interlude that appears once in each chapter. The new material on applications includes research related to family policy (Gennetian & Miller, 2003) (chapter 1), groundbreaking research on the reduction of preterm births by administering progesterone to pregnant women (Meis, 2003) (chapter 2), physical fitness and mortality (chapter 4), training the attention and memory of older adults (chapter 6), intervention in improving children's intelligence (Brooks-Gunn, 2003) (chapter 7), latest results from the National Institute of Child Health and Development's longitudinal study of child care (NICHD, 2002, 2003) (chapter 10), Vaillant's (2002) longitudinal study which identifies the factors in the

fifties that are linked with health, happiness, and mortality in the seventies (chapter 11), acquaintance rape (chapter 12), Fast Track intervention for preventing conduct problems (The Conduct Problems Prevention Research Group, 2002) (chapter 13), punishment and discipline (Gershoff, 2002) (chapter 14), bullying (chapter 15), and high school dropouts (chapter 16).

In addition to giving special attention to applications throughout the text, a Careers in Life-Span Development appendix appears at the end of the book. It describes a number of careers in education/research, clinical/counseling, medical/nursing/physical, and families/relationship categories. Numerous Web links provide students with opportunities to read about these careers in greater depth.

### Contexts

Contextual variations in development are discussed throughout the text and in the Contexts of Life-Span Development interludes, which especially highlight cultural and ethnic aspects of development. The new material on contexts includes a new Contexts in Life-Span Development interlude, Living Longer in Okinawa (Wilcox, Wilcox, & Suzuki, 2002) (chapter 3), cross-cultural comparisons of intelligence (Grigorenko & others, 2001) (chapter 8), stereotype threat (Aronson, Fried, & Good, 2002) (chapter 8), a new Contexts in Life-Span Development interlude, Bilingual Education (chapter 9), gender, culture, and temperament (chapter 10), generation status and identity development in immigrants (Phinney, 2003) (chapter 11), ethnic variation in timing of sexual behaviors in U.S. adolescents (chapter 12), cross-cultural comparisons of punishment (chapter 14), socioeconomic status and parenting (Hoff, Laursen, & Tardiff, 2002) (chapter 15), acculturation and ethnic minority parenting (Coll & Pachter, 2002) (chapter 15), home environments of families from different ethnic groups (Bradley & others, 2001) (chapter 15), and cross-cultural comparisons of work in adolescence (chapter 16).

### IMPROVED ACCESSIBILITY AND INTEREST

This new edition of this text should be more accessible to students because of the extensive rewriting, better organization, and improved learning system.

### Writing and Organization

Every sentence, paragraph, section, and chapter of this book was carefully examined and when appropriate revised and rewritten. The result is a much clearer, better organized presentation of material in this new edition. Many new introductions to sections were written, numerous sections were moved, and a number of new examples of concepts were introduced—all in the interest of providing students with a more understandable, integrated book.

### The Learning System

I strongly believe that students should not only be challenged to study hard and think more deeply and productively about life-span development, but should also be provided with an effective learning system. Instructors and students commented about how student-friendly the first edition was. However, I strive to keep making the learning system better and I am excited about the substantial improvements for this new edition.

Now more than ever, students struggle to find the main ideas in their courses, especially in courses like life-span development, which include so much material. The new learning system centers on learning goals that, together with the main text headings, keep the key ideas in front of the reader from the beginning to the end of the chapter. Each chapter has no more than six main headings and corresponding learning goals, which are presented side-by-side in the chapter-opening spread. At the end of each main section of a chapter, the learning goal is repeated in a feature called “Review and Reflect,” which prompts students to review the key topics in the section and poses a question to encourage them to think critically about what they have read. At the end of the chapter, under the heading, “Reach Your Learning Goals,” the learning goals guide students through the bulleted chapter review.

In addition to the verbal tools just described, maps that link up with the learning goals are presented at the beginning of each major section in the chapter. At the end of each chapter, the section maps are assembled into a complete map of the chapter that provides a visual review guide. The complete learning system, including many additional features not mentioned here, is presented later in the Preface in a section titled To the Student.

### CHAPTER-BY-CHAPTER CHANGES

Numerous changes were made in each of the 17 chapters in *A Topical Approach to Life-Span Development, second edition*.



#### CHAPTER 1 Introduction

Extensively revised and improved discussion of issues in development (nature/nurture, stability/change, and continuity/discontinuity)

New research data presented in figure 1.5 on age and happiness  
Revised, easier-to-understand presentation of Vygotsky’s theory  
Updated, revised Applications in Life-Span Development interlude, Family Policy, including recent research (Gennetian & Miller, 2003)

Revised, expanded Contexts in Life-Span Development interlude on individual, family, and extrafamilial contexts, including recent research on ethnicity, socioeconomic status, and families (Bradley & others, 2001)

Reorganization of main section on research into four parts: Methods for Collecting Data; Research Designs; Time Span of Research; and Ethics

New Research Designs section that focuses on descriptive, correlational, and experimental research

New discussion of naturalistic observational research study on parents' explanations of science to sons and daughters at a science museum, including new figure 1.14 that illustrates results of the study (Crowley & others, 2001)

New discussion of Erikson's case study analysis of Mahatma Gandhi's life

Expanded discussion of ethics in research



## CHAPTER 2 Biological Beginnings

New section on evolutionary developmental psychology (Bjorklund & Pellegrini, 2002)

New section on genetic imprinting

Updated, very contemporary coverage of the Human Genome Project (Klug & Cummings, 2003)

New high interest figure 2.10, Your Genetic Future

Important new section on the collaborative gene, which describes the views of David Moore, Gilbert Gottlieb, and Barry Commoner, who believe there has been too much emphasis on genetic determinism

New section on the epigenetic view, including new figure 2.12

New coverage of phenylketonuria (PKU) in terms of the nature-nurture issue

New discussion of teratogens in terms of dose, time of exposure, and genetic susceptibility

Added recent review of research on prenatal exposure to cocaine (Frank & others, 2001; Lester & others, 2002)

Recent research on marijuana's effects during pregnancy (Richardson & others, 2002)

New section on incompatible blood types

Added recent research on age of mother and low birth weight delivery (Tough & others, 2002)

New discussion of labor and delivery across cultures

New coverage of low birth weight infants in terms of distinguishing low and very low birth weight; also new discussion of small for date infants

New discussion of cross-cultural comparisons of low birth weight infants and new figure 2.16 that illustrates low birth weight rates by country

Recent research showing outcomes for low birth weight infants in childhood and adolescence (Ment & others, 2003)

New research figure 2.17, showing the results of one of Tiffany Field's studies on massaged preterm infants

New coverage of recent groundbreaking study on the reduction of preterm births by administering progesterone to pregnant women (Meis, 2003)



## CHAPTER 3 Physical Development and Biological Aging

Expanded, updated coverage of puberty, especially in terms of adrenarche, gonadarche, and hormonal changes (Susman, Dorn, & Schiefelbein, 2003)

New discussion of the role of leptin in weight and body weight during puberty

New discussion of recent research on parent-adolescent relationships and links between hormones and adolescent behavior (Booth & others, 2003)

New section on physiological changes in lung capacity during middle age and new figure 3.5 showing the relation of lung capacity to age and cigarette smoking

New figure 3.6 on changes in body composition of bone, muscle, and fat from 25 to 75 years of age

Substantially revised organization of the discussion of the brain with a much improved introduction of basic aspects of brain physiology to set the stage for improved understanding of developmental changes in the brain through the life span

Expanded coverage of early deprivation and brain activity, including new figure 3.11 of the brain scan of a Romanian orphan and a normal child

New discussion of the fascinating story of Michael Rehbein, who had the left hemisphere of his brain removed when he was 7 years old, including new figure 3.12 of brain scans showing how his right hemisphere took over some of the functioning previously carried out by his left hemisphere.

New research on brain changes during adolescence (Baird & others, 1999)

New section on neurotransmitters and aging, including recent research (Leventhal & others, 2003)

Expanded coverage of changes in neurons and aging, including new figure 3.16 that shows new nerve cells generated in adult mice (Kempermann, van Praag, & Gage, 2000)

Important new brain research on decreased brain lateralization in older adults, including new figure 3.17 showing brain scans that illustrate this concept

Updated research coverage of SIDS, including the reasons why sleeping in a prone position is linked with SIDS (Horne & others, 2002; Kahn & others, 2002)

New Contexts of Life-Span Development Interlude, Living Longer in Okinawa, with emphasis on diet, low-stress lifestyle, a caring community, activity, and spirituality; includes new figure 3.21 on the risks of dying from cancer in Okinawa, Japan, and the United States

Coverage of new theory of aging—the mitochondrial theory—that is receiving increased attention (Dillin & others, 2002; Pierson, 2003)

New discussion of increased myelination of neural pathways that connect the limbic system and the prefrontal cortex in the forties and fifties, which is likely linked with increased reflection in middle-aged adults (Fischer & Pruyne, 2003)

New section on the decrease in brain weight and volume with aging (O'Connor & Kaplan, 2003)

New analysis by Baltes and Smith showing the significant problems faced by individuals 85 and over and the increase in successful aging for those in their sixties and seventies



## CHAPTER 4 Health

Added recent research on the failure of many adult males to adequately use the health-care system (Courtenay, McCreary, & Merighi, 2002)

New data on the percentage of older adults of different ages with a disability, including new figure 4.2

New data on the percentage of older adults of different ages in nursing homes, including new figure 4.4

New research figure 4.5 on the link between perceived control and mortality

Moved section on leading causes of death across the life span to chapter 17, "Death and Grieving," at the request of reviewers

At the request of reviewers, deleted section on stress and coping, especially because this research has lacked a developmental focus; the chapter now focuses more clearly on physical health, with a better-integrated presentation, reducing length and number of topics in chapter

Significant research updating of breastfeeding versus bottle-feeding (Oddy, 2002; Ryan, Wenjun, & Acosta, 2002), including new figure 4.6 on trends in breastfeeding; also new research on link between breastfeeding and lower risk of obesity (Dewey, 2003)

Significant updating of research on childhood obesity (Guo & others, 2002; Wisotsky & Swenioinis, 2003)

Very recent research on childhood obesity including new figure 4.7 on the percentage of overweight children who become overweight adults (Guo & others, 2002; Maynard & others, 2003)

New discussion of obesity and eating disorders in adolescence, including new figure 4.8 on the increase in obesity from 1968 to 2000 (National Center for Health Statistics, 2003)

Recent update on calorie restriction and longevity (Johannes, 2002)

New discussion of decrease in PE programs in U.S. schools (Health Management Resources, 2001)

New research figure 4.11 on the link between physical fitness and mortality

Addition of new review of research on aging and exercise (Slade & others, 2002)

Research update of trends in adolescent drug use (Johnston, O'Malley, & Bachman, 2003)

Recent research on binge drinking in college students (Wechsler & others, 2002)

New figure 4.13 on fatal lung cancer and years since quitting smoking

Recent longitudinal research on developmental change in drinking patterns from late adolescence to the early thirties (Bachman & others, 2002), including new figure 4.14

New section on substance abuse in older adults including recent national data on the decline in alcohol use in middle and late adulthood (National Center for Health Statistics, 2002), including new figure 4.15



## CHAPTER 5 Motor, Sensory, and Perceptual Development

Many new examples of concepts, especially challenging concepts such as the dynamic systems view and the ecological view of perceptual development

Expanded and improved discussion of Karen Adolph's research on the role of experience in learning a new motor behavior, including new figure 5.2

New coverage of movement and aging, including new figure 5.3

Expanded coverage of fine motor development in older adults, including two explanations of the slowing of this activity: neural noise and strategy

Extensively revised and updated coverage of handedness

Much expanded and more detailed discussion of research techniques for studying infant perception in the Research in Life-Span Development interlude, including the visual preference method, habituation, and tracking; includes new figure 5.6 on Alan Slater's research on habituation

New figure 5.7 showing visual acuity during the first months of life

New figure 5.8 showing how 1- and 2-month-old infants scan the human face

Expanded coverage of perceptual constancy in infancy

New discussion of binocular vision and its emergence at 3 to 4 months of age, providing a powerful cue to depth

New figure 5.10 from Bruce Hood's laboratory showing a research study being conducted on toddlers' perception of ball being dropped in a tube and where they will search for it

New research on the importance of age of older adults in determining the degree of their decline in visual perception (Brabyn & others, 2001), including new figure 5.11

New discussion of the decline in depth perception in older adults

New discussion of speech perception and when infants become "native listeners" (Jusczyk, 2002)

Expanded coverage of hearing in infancy to include changes in the perception of loudness, pitch, and sound localization





## CHAPTER 6 Cognitive Developmental Approaches

Revised and expanded coverage of Piaget's concept of schemes  
 New figure 6.1 that summarizes the main characteristics of Piaget's four stages  
 Expanded coverage in the Research on Life-Span Development interlude with discussion of the violations of expectations method and new figure 6.4 to show the procedures used in the study of object permanence  
 Provided extensive example of the concept of zone of proximal development  
 Expanded material on description of private speech with examples and research  
 Updated coverage of Barbara Rogoff's ideas on cognitive apprenticeship  
 New entry in figure comparing Piaget and Vygotsky on socio-cultural contexts  
 Added criticisms of Vygotsky's approach



## CHAPTER 7 Information Processing

Expanded coverage of the role of computers in the information-processing approach and new figure 7.1 showing the computer metaphor for human information processing  
 New figure 7.2 showing a simplified version of information processing to improve students' understanding of this approach  
 New coverage of the explanations for increased information-processing speed in childhood and decreased processing speed in aging adults  
 New figure 7.3, The Relation of Age to Reaction Time  
 Completely revised, updated coverage of developmental changes in attention in adulthood in terms of selective attention, divided attention, and sustained attention  
 Discussion of recent research by Pickrell & Loftus (2001) on implanted false memories at Disneyland  
 New figure 7.7 on developmental changes in memory span  
 Expanded coverage of working memory and new figure 7.8 showing Baddeley's working memory model  
 New discussion of research on imagery and memory of verbal information, including new research figure 7.9 on this topic  
 New research figure 7.10 on the role of expertise in memory  
 New section on memory reconstruction and schema theory  
 New section on memory development in adolescence and movement of memory and study strategies from main text to a new figure  
 New research figure 7.13 on memory for Spanish as function of age since Spanish was learned  
 New section on prospective memory  
 New coverage of source memory and aging (Hasher, 2003)

Expanded discussion of "use it or lose it" with recent research studies  
 New figure 7.14 on recent research involving training of attention and memory in older adults (Levy, Jennings, & Langer, 2001)  
 Expanded, updated research coverage of scientific thinking in children  
 Revised, updated, easier-to-understand coverage of theory of mind, including new figure 7.17 involving developmental changes in theory of mind  
 New discussion of research on time of day effects on the memory of younger and older adults (Hasher & others, 2002)  
 New discussion of research on the role of expectancy in the memory of older adults (Hess & others, 2002)



## CHAPTER 8 Intelligence

Extensive rewriting and reorganization of the chapter for better student understanding  
 Brief discussion and definition of factor analysis added to help students understand the factor analytic approach to intelligence  
 New discussion of the Key School as reflective of Gardner's multiple intelligence theory  
 New section on the Sternberg Triarchic Abilities Test (STAT)  
 New section on emotional intelligence, including very recent material on the development of a measure to assess emotional intelligence (Mayer, Salovey, & Caruso, 2002)  
 New figure 8.3 that compares Gardner's, Sternberg's, and Salovey/Mayer's approaches  
 New discussion of whether people have a general intelligence with links between general intelligence and job success, as well as John Carroll's (1993) extensive examination of intellectual abilities  
 New figure 8.4 on the correlation between intelligence test scores and twin status (Grigorenko, 2000)  
 Much expanded coverage of the influence of heredity and environment on intelligence  
 New discussion of heritability  
 New figure 8.5 on the Flynn effect  
 New coverage of a leading expert's conclusions on what research indicates about the role of intervention in improving children's intelligence (Brooks-Gunn, 2003)  
 New section on controversies and group comparisons in intelligence, which includes new material on gender comparisons  
 Much expanded coverage of cross-cultural comparisons of intelligence, including recent research (Grigorenko & others, 2001; Sternberg & others, 2001)  
 New coverage of the concept of stereotype threat and the intelligence of ethnic minority individuals (Aronson, Fried, & Good, 2002; Steele & Aronson, 1995)  
 New figure 8.10 on classification of mental retardation based on IQ  
 New figure 8.11 on classification of mental retardation based on levels of support needed

New discussion of the role of practice in giftedness  
 New photo of Mihaly Csikszentmihalyi in the setting where he gets his most creative thoughts  
 Expanded discussion of Baltes' research on wisdom (Baltes & Kunzmann, 2003; Kunzmann & Baltes, 2003)



## CHAPTER 9 Language Development

Extensive rewriting and reorganization of the chapter with the development of language now preceding the section on biological and environmental influences  
 New figure 9.1 on the rule systems of language with numerous examples  
 Updated material on change in language in early childhood and middle and late childhood  
 Considerable expansion and reorganization of material on the development of language in infancy with subsections on babbling and other vocalizations, recognizing language sounds, first words, two-word utterances, and language production and language comprehension  
 New figure 9.2 showing the research setting in Patricia Kuhl's studies of infants changing from being universal linguists to specializing in the speech of their native language  
 Deletion of the discussion of MLU at the request of reviewers and adopters  
 New Research in Life-Span Development interlude, Family Environment and Young Children's Language Development, including new figure 9.7  
 Considerably updated coverage of the best way to teach children to read, including the recommendations of the prestigious National Reading Panel (2000)  
 New figure 9.9 showing the results of a national assessment of reading achievement and its relation to how much children read daily  
 New section on preparing for literacy in early childhood (Pressley, 2003)  
 Expanded coverage of children's writing with new material on the importance of planning, drafting, and revising (Pressley, 2003)  
 New Contexts in Life-Span Development interlude on bilingual education that includes Kenji Hakuta and his colleagues' (2000) research on how long it takes to develop proficiency in a second language



## CHAPTER 10 Emotional Development

New discussion of biological foundations of emotions and experience in emotions, including early development in the brain and cultural influences (Thompson, 2003)

New section on early developmental changes in emotions, including new figures 10.1 and 10.2 with a focus on the distinction between primary and self-conscious emotions (Lewis, 2002)  
 New section on infant fear, including new discussion of separation protest and new research figure 10.3 on separation protest in four cultures  
 New section on emotional regulation and coping in infancy (Kopp & Neufeld, 2002)  
 Expanded, revised, and updated discussion of emotion in adolescence (Rosenblum & Lewis, 2003)  
 New figure 10.6 on differences in the emotions of adolescents and their parents  
 Expanded coverage of developmental changes in positive and negative emotions across the adult years, including new figure 10.7 (Mroczek, 2001)  
 Based on recommendations of reviewers, moved material on suicide to chapter 17, "Death and Grieving," and deleted material on depression from this chapter to provide a more cohesive, integrated chapter  
 New discussion of Kagan's ideas on inhibition to the unfamiliar as an important temperament category and recent research showing that a substantial number of toddlers who are inhibited become less inhibited at 7 years of age (Pfeifer & others, 2002)  
 New section in temperament on the roles of biological foundations and experience  
 Expanded coverage of positive affect and approach, and effortful control, as temperament categories  
 New section in temperament on developmental contexts  
 New discussion of gender, culture, and temperament  
 New research figure 10.10 showing the dramatic effects of Harlow's contact comfort study  
 Expanded coverage of attachment and culture, including new figure 10.12 comparing the attachment patterns of U.S., German, and Japanese babies  
 Extensively updated coverage of the National Institute of Child Health and Human Development's longitudinal study of child care (NICHD Early Child Care Research Network, 2001, 2002, 2003) in the Research in Life-Span Development interlude  
 Expanded, updated material on adolescent dating and romantic relationships, including new research figure 10.13 on age patterns (Buhrmester, 2001)



## CHAPTER 11 The Self, Identity, and Personality

New figure 11.1 illustrating the development of self-recognition in infancy  
 More streamlined, focused coverage of changes in self-understanding in adolescence  
 New figure 11.3 on changes in global self-esteem across the human life span (Robins & others, 2002)

New section on personal control that focuses on Jutta Heckhausen's (1997, 2001, 2002) views on primary control striving and secondary control striving, including new figure 11.6

New discussion of the increase in identity certainty from the thirties through the fifties, including new figures 11.7 and 11.8

New discussion of Jean Phinney's (2003) recent ideas about generational status and identity in immigrants

Revision of material on the big five factors of personality, using the OCEAN acronym to help students to remember the big five

New figure 11.12 on emotional instability and age

New figure 11.13 on age and well-being

New section on generativity including recent research and new figures 11.15 and 11.16 (Stewart, Ostrove, & Helson, 2001)

New figure 11.17 showing age changes in openness to experience in early and middle adulthood

New section on George Vaillant's (2002) longitudinal studies, including new figure 11.18 on links between characteristics at age 50 and health and happiness at ages 75 to 80

Revised, updated discussion of conclusions about stability and change based on Avshalom Caspi and Brent Robert's (2001) views

Added Jean Phinney's (2003) recent views on generation status and identity development in immigrants



## **CHAPTER 12** **Gender and Sexuality**

Extensive revision, updating of discussion of hormonal influences and gender (Lippa, 2002)

Expanded, updated coverage of peer group influences on gender (Maccoby, 2002; Martin & Fabes, 2001)

New figures 12.1 and 12.2, summarizing different gender theories

Updated, expanded discussion of differences in the brains of males and females

New coverage of William Pollack's (1999) view on what he calls the "boy code" of showing little if any emotion as boys grow up

Updated coverage of AIDS (Centers for Disease Control and Prevention, 2002b)

Expanded, updated coverage of acquaintance rape, including new figure 12.7 (Fisher, Cullen, & Turner, 2000)

New discussion of research on ethnic variations in the timing of sexual behaviors in U.S. adolescents, including new figure 12.8

Expanded, updated coverage of developmental pathways in a sexual identity development in gay and lesbian individuals (Diamond, 2003)

Updated coverage of risk factors for sexual behavior, including recent research (Buhrmester, 2001; Miller, Benson, & Galbraith, 2001)

Recent research on cross-cultural comparisons of adolescent pregnancy, including figure 12.9

Change in labeling from sexually transmitted diseases (STDs) to sexually transmitted infections (STIs) in line with current terminology



## **CHAPTER 13** **Moral Development, Values, and Religion**

Substantial revision of organization of chapter with main headings now domains of moral development; contexts of moral development; prosocial and antisocial behavior; and values, religion, spirituality, and meaning in life

Added figure 13.2 showing typical responses of individuals at each of Kohlberg's stages to the Heinz and the Druggist story

Substantial updating of the social cognitive theory of moral development based on Bandura's (1999, 2002) recent views

New discussion of Kohlberg's contemplation of adding a seventh stage to his theory

Added material on Rest's Defining Issues Test and criticism of Kohlberg's approach to assessing moral reasoning, including new figure 13.4 on the moral dilemmas of interest to adolescents

Expanded discussion of how moral thoughts can be used to justify immoral behavior with examples from 9/11/01 and the war on terrorism (Bandura, 2002)

New discussion of research on guilt (Kochanska & others, 2002)

New research on the link between maternal warmth and children's empathy (Zhou & others, 2002)

New discussions of gender differences in altruism and volunteering (Eisenberg & Morris, 2004)

Added discussion of study of caring and prosocial behavior in a highly impoverished group of adolescents

Addition of new research showing a link between altruism and longevity (Brown, in press)

New coverage of the Pittsburgh Youth Study, a longitudinal study of the development of delinquency (Loeber & others, 2002; Stouthamer-Loeber & others, 2002)

New research on the role of siblings in delinquency

Expansion of material on the antecedents of delinquency to include cognitive distortions, authority conflict, and other factors

New discussion of Fast Track, an extensive delinquency prevention study (The Conduct Problems Prevention Research Group, 2002)

Recent research linking early problems in aggression with later delinquency for boys but not girls (Broidy & others, 2003)

Research update on the values of college students (Sax & others, 2002)

Reorganization of section on religion and adolescents, including new material on parenting/attachment and religious interest in adolescents (Ream & Savin-Williams, 2003)

New section on the positive role of religion in adolescents' lives

Discussion of link between happiness and having a meaningful faith (Diener, Lucas, & Oishi, 2002)

Coverage of recent study showing an increase in spirituality between late middle adulthood (mid-fifties/early sixties) and late adulthood (late sixties/mid-seventies) (Wink & Dillon, 2002), including new research figure 13.8

Much expanded coverage of meaning in life with description of Baumeister's (1991; Baumeister & Vohs, 2002) views on the four needs that guide how people try to make sense of their lives

Inclusion of recent research on the link between finding meaning in religion and life satisfaction in older adults (Krause, 2003)

Recent study of church attendance in older adults (Idler, Kasl, & Hays, 2001)



## CHAPTER 14 Families, Lifestyles, and Parenting

Revised, new chapter title: Families, Lifestyles, and Parenting

Reorganization of chapter's main section for better flow

Added critique of family life cycle concept

New section on family processes that focuses on reciprocal socialization, the family system, and sociocultural and historical influences

At beginning of section on family processes, connection with Bronfenbrenner's ecological theory; connections with Bronfenbrenner's theory several other times in chapter as well

New figure 14.2 on Belsky's concept of direct and indirect effects in family processes

New discussion of research on links between marital relations and parenting (Grych, 2002)

Expanded coverage of cohabitation, including explanations of why cohabiting is linked with greater vulnerability to divorce

New coverage of Hetherington's six pathways that divorced adults follow (Hetherington & Kelly, 2002)

New discussion of recommended strategies for divorced adults

New discussion of anxiety that many childless highly successful women have (Hewlett, 2002)

Updated research on stepfamilies (Hetherington & Stanley-Hagan, 2002)

New section on the transition to parenting

Expanded, updated coverage of parenting styles including new material on why authoritative parenting is linked with positive developmental outcomes (Steinberg & Silk, 2002)

New section on punishment and discipline, including new figure 14.8 on attitudes toward corporal punishment in different countries, as well as recent theory and research on punishment (Gershoff, 2002)

Recent research on child maltreatment and problems in regulating emotion (Maughan & Cicchetti, 2002)

New section on coparenting, including recent research (McHale & others, 2002)

Updated, extensively revised discussion of working parents based on recent research (Gottfried, Gottfried, & Bathurst, 2002; Hill & others, 2001)

New figure 14.11 on the percentage of children with problems in intact and divorced families (Hetherington & Kelly, 2002)

Added comments about marital conflict having negative consequences in the contexts of marriage or divorce (Cummings, Braungart-Rieker, & Du Rocher-Schudlich, 2003)

New research on child-rearing antecedents of intergenerational relations (Belsky & others, 2001)



## CHAPTER 15 Peers and the Sociocultural World

Reorganization of chapter with this order of topics: peer relations in childhood and adolescence, friendship, play and leisure, aging and the social world, and sociocultural influences

Reordering of "B" headings/sections under peer relations in childhood and adolescence to put peer statuses, bullying, and gender and peer relations in sequence

New figure 15.1, illustrating the development of communication skills and perspective taking

Recent research on rejected children (Buhs & Ladd, 2002)

Updated coverage of bullying and new figure 15.2 on bullying behaviors by U.S. youth based on a recent national study (Nansel & others, 2001)

New section on gender and peer relations, including new figure 15.3 (Maccoby, 1998, 2002)

Updated coverage of peer statuses to include average children

Extensive revision of section on cliques and crowds with improved distinctions between these two types of adolescent groups

New Contexts in Life-Span Development interlude on cross-cultural comparisons of peer relations

New figure 15.6 on developmental changes in self-disclosing conversations

New discussion of why friendship in adulthood may contribute more to psychological well-being than family relationships (Pruchno & Rosenbaum, 2003)

New sections on leisure in adolescence and in adulthood

Research updates on activity and social networks in late adulthood (Menec, 2003; Zunzunegui & others, 2003)

New description of research on how self-conceptions are linked to culture, including research study and new figure 15.9 comparing U.S. and Chinese college students

Updated, expanded coverage of socioeconomic status and parenting (Hoff, Laursen, & Tardif, 2002; Magnuson & Duncan, 2002)

Updated coverage of poverty rates in the United States, which have declined recently (Children's Defense Fund, 2001) and cross-cultural comparisons of poverty rates

New figure 15.10 on the percentages of youth under 18 who are living in distressed neighborhoods

Extensive updating on families and poverty with recent research (Gennetian & Miller, 2002; Huston & others, 2001; Mistry & others, 2002)

New figure 15.11 on the actual number of adolescents from different ethnic groups in the United States and the number projected in 2100

New Applications in Life-Span Development interlude, Acculturation and Ethnic Minority Parenting, based on the views of Cynthia Garcia Coll and Lee Pachter (2002)

Recent research on similarities and differences in the home environments of families from different ethnic groups, including new figure 15.12 (Bradley & others, 2001)



## **CHAPTER 16** **Schools, Achievement, and Work**

New section on accountability and testing in education

New discussion of updated *Turning Points 2000* (Jackson & Davis, 2002) recommendations for improving U.S. middle schools

New section on high schools that focuses on school dropouts and what needs to be done to improve U.S. high schools (National Commission on the High School Senior Year, 2001)

Updated coverage of the transition to college (Sax & others, 2002)

Much expanded and updated discussion of learning disabilities (Siegel, 2003)

Updated research on intervention with ADHD children (Swanson & others, 2001; Swanson & Volkow, 2002)

Extensively expanded, updated, and revised coverage of achievement

Expanded discussion of intrinsic and extrinsic motivation with new subsection on extrinsic rewards and intrinsic motivation (Cameron, 2001)

New section on mastery motivation

New figure 16.6 on mothers' beliefs about the factors responsible for children's math achievement in three countries

Updated coverage of the occupational outlook for various fields (*The Occupational Outlook Handbook, 2002–2003*)

Revised organization of section on work to give it a stronger developmental focus

New section on work in adolescence

New coverage of cross-cultural comparisons of work in adolescence

Updated, revised coverage of dual-career couples, including new figure 16.8 on historical changes in the percentage of traditional and dual-career couples in the United States (Barnett, 2001)

New figure 16.9 on developmental changes in job satisfaction

New research study on morale of individuals depending on how long they had been retired (Kim & Moen, 2001)



## **CHAPTER 17** **Death and Grieving**

New discussion of palliative care (Chochinov, 2002; Williams and Wheeler, 2001)

Update on Oregon's active euthanasia law through 2001

Increased coverage of end-of-life issues (Wilson & Truman, 2002)

New section on suicide, including recent U.S. data on suicide rates through the life span and new figure 17.2 (National Center for Health Statistics, 2002)

Recent research on meaning and purpose in life, as well as spirituality, in helping dying individuals to cope (McClain, Rosenfeld, & Breitbart, 2003; Smith, McCullough, & Poll, in press)

New coverage of three aspects of meaning-making coping: (1) personal, (2) family, and (3) community (Hayslip & Hansson, 2003)

Addition of new information about recent study on the economic consequences of widowhood on older women in the United States and Germany (Hungerford, 2001)

New discussion of recent study on the role of psychological and religious factors in the well-being of older adults following the loss of a spouse (Fry, 2001)

## **ACKNOWLEDGMENTS**

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Thanks go to the many reviewers of both the second and first editions of this text. Their extensive contributions have made this a far better book.

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## SUPPLEMENTS

This second edition of *A Topical Approach to Life-Span Development* is accompanied by a comprehensive and fully integrated array of supplemental materials that are written specifically for the instructors and students of life-span development. Please contact your McGraw-Hill representative for details concerning policies, prices, and availability. To locate your McGraw-Hill representative, please go to [www.mhhe.com](http://www.mhhe.com) and select Rep Locator.

## FOR THE INSTRUCTOR

### Instructor's Manual

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### Test Bank

Prepared by Rita Zimmerman, this complete Test Bank includes a wide range of conceptual multiple-choice and essay questions.

Each question references the Learning Goal it covers. The Test Bank is available only on the Instructor's Resource CD-ROM as a Computerized Test Bank (Mac/IBM) and also in Word and Rich Text formats.

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Jasna Jovanovic, University of Illinois, Urbana-Champaign McGraw-Hill's Visual Assets Database is a password protected online database of hundreds of multimedia resources for use in classroom presentations, including original video clips, audio clips, photographs, and illustrations—all designed to bring to life concepts in developmental psychology. In addition to offering ready-made multimedia presentations for every stage of the life span, the VAD's search engine and unique "My Modules" program allows instructors to select from the database's resources to create their own customized presentations, or "modules." These customized presentations are saved in an instructor's folder on the McGraw-Hill site, and the presentation is then run directly from the VAD to the internet-equipped classroom.

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## FOR THE STUDENT

### Multimedia Courseware for Life-Span Development CD-ROM

Packaged with your text is a set of interactive CD-ROMs created by Charlotte Patterson of the University of Virginia. These CDs cover the central phenomena and classic experiments in Child Development. Following Charlotte Patterson's model, Carolyn

Johnson from Pennsylvania State University gathered material and created exercises focusing on the studies and theories surrounding Adult Development. Together, these two sets of CDs make up Multimedia Courseware for *Life-Span Development*. Look for the CD icon that appears several times in the margins of each chapter. This will direct you to either the Child Development CD or the Adult Development CD to learn more about the experiments that have shaped life-span development.

These CDs include video footage of classic and contemporary experiments, detailed viewing guides, challenging pre-views, follow up and interactive feedback, graphics, graduated developmental charts, a variety of hands-on projects, related websites and navigation aids. Programmed in a modular format, the content focuses on integrating digital media to better ex-

plain physical, cognitive, social, and emotional development from early childhood through adult development.

### **Online Learning Center**

As you study, you can refer to the site's Student Edition for learning objectives, video clips, an interactive glossary, and much more. You can also access PowerWeb content to see chapter topics illustrated in the real world. Before taking an exam, you can point and click your way through the chapter summary, take self-grading quizzes, and work through interactive exercises. These resources and more can be found by logging on to the website at [www.mhhe.com/santrockltd2](http://www.mhhe.com/santrockltd2).

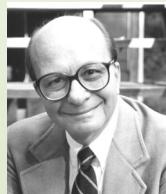
# Expert Consultants



## **Pamela Balls Organista**

Pamela Balls Organista, Professor of Psychology at the University of San Francisco, is one of the world's leading experts on ethnicity. She completed her bachelor's degree in Psychology and Black Studies at Washington University in St. Louis, doctorate in clinical psychology at Arizona State University, and clinical psychology post-doctorate in the Department of Psychiatry at the University of California—San Francisco. Prior to joining the faculty at USE, she was an Assistant Clinical Professor providing psychotherapy, consultation, and supervision in the Department of General Internal Medicine

at UCSF. Her research interests include prevention interventions and ethnic minority health issues. Dr. Organista's publications include *Readings in Ethnic Psychology: African Americans, American Indians, Asian Americans, and Hispanics/Latinos* (1998), and *Acculturation: Advances in Theory, Measurement, and Applied Research* (2003), which she co-edited with Kevin Chun and Gerardo Marín. She also has published articles on migrant laborers and AIDS and on stress and coping in primary care patients. She is the founding and present faculty coordinator of the Ethnic Studies Program at the University of San Francisco and from 1998–2000 served as the Director of Academic Advising in the College of Arts and Sciences at the University of San Francisco.



## **Gilbert Gottlieb**

Gilbert Gottlieb is one of the world's leading experts on early biological and environmental influences on development. He has been a Research Professor of Psychology in the Center for Developmental Science at the University of North Carolina at Chapel Hill since 1995. He served as an Excellence Foundation Professor of Psychology at UNC-Greensboro from 1982–1995, and as a Research Scientist at Dorothea Dix Hospital in Raleigh, NC, from 1961–1982. He received his Ph.D. from Duke University, where he participated in both the clinical and experimental psychology programs and was the first graduate from the joint Psychology-Zoology graduate training program in animal behavior. In 1973, he helped to revive interest in the field of behavioral embryology by editing a volume by that name, along with contributing theoretical reviews of the field to the *Quarterly Review of Biology* (1968) and the *Psychological Review* (1976). His interest in the developmental basis of evolution re-

sulted in a 1992 book, *Individual Development and Evolution*. More recently, Professor Gottlieb summarized his career-long research and theoretical efforts in *Synthesizing Nature-Nurture* (1997), which won the 1998 Eleanor Maccoby Award of the Developmental Psychology Division of the American Psychological Association. In 1999 Clark University Press published his monograph, *Probabilistic Epigenesis and Evolution*, which is based upon the Heinz Werner Lectures he gave there. From 1962 through 2003, Professor Gottlieb has been a recipient of research grants from the National Institutes of Mental Health and from Child Health and Human Development, as well as from the National Science Foundation. He has been a guest of the Czechoslovak Academy of Science in Prague and the USSR Academy of Sciences in Moscow, and advisor to the German National Science Foundation. He is a past president of the International Society for Developmental Psychobiology and a recipient of the Distinguished Scientific Contributions to Child Development Award from the Society for Research in Child Development.



## **Linda Mayes**

Linda Mayes is one of the world's leading experts on prenatal and infant development. Dr. Mayes is the Arnold Gesell Professor of Child Psychiatry, Pediatrics, and Psychology in the Yale Child Study Center, where she coordinates the early childhood programs. Trained as both a child and adult psychoanalyst and as a pediatrician, neonatologist, and child developmentalist, her work integrates perspectives from developmental psychology, neuroscience, and child psychiatry. Dr. Mayes' scien-

tific papers and chapters are published in child psychiatric, developmental psychology, pediatric, and psychoanalytic journals. Her recent book for parents (written with Dr. Donald Cohen) is entitled *The Yale Child Study Center Guide to Understanding Your Child's Development* and is dedicated to helping parents understand the many ways children develop, to learn to observe their children's individual personality, and to reflect on their own development as a parent. Dr. Mayes's work at the Center is bringing the most informed and contemporary understanding of children's development into practical applications for families.





### **James E. Birren**

James E. Birren is a pioneering figure in the field of life-span development and continues to be one of the world's leading experts on adult development and aging. He currently is Associate Director of the UCLA Center on Aging and is also Professor Emeritus of Gerontology and Psychology at the University of Southern California. Birren received his M.A. and Ph.D. from Northwestern University, and has been a Visiting Scientist at the University of Cambridge, England, and a Fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University. Birren's career includes serving as founding Executive Director and Dean of the Gerontology Center at the University of Southern California, as well as

Past President of the Gerontological Society of America, the Western Gerontological Society, and the Division on Adult Development and Aging of the American Psychological Association. In addition, he has served as Chief of the Section on Aging of the National Institutes of Mental Health. His awards include the Brookdale Foundation Award for Gerontological Research; honorary doctorates from the University of Gothenberg, Sweden, Northwestern University, and St. Thomas University, Canada; the Gerontological Society Award for Meritorious Research; the Sandoz Prize for Gerontological Research; and the Canadian Association of Gerontology Award for Outstanding Contribution to Gerontology. Birren is Series Editor of the internationally recognized *Handbooks on Aging* and has published more than 250 academic journal articles and books.



### **Rachel Keen**

Rachel Keen (formerly Rachel Keen Clifton) is one of the world's leading experts on perceptual-motor and cognitive development in infants. She received her doctorate from the Institute of Child Development at the University of Minnesota. After a postdoctoral fellowship at the University of Wisconsin and University of Iowa, she came to the University of Massachusetts-Amherst in 1968 where she is now a professor. Her research has been supported by the National Institutes of Health, the National Science Foundation, and the March of Dimes. She held a Research Scientist Award from the National Institute of Mental Health from 1981–2001, and currently has a MERIT award from the National Institute of Child Health and Human Development. She has served

terms on three research review panels at these institutes and has been on the editorial board of *Developmental Psychology*, *Infant Behavior and Development*, and *Journal of Experimental Child Psychology*. Dr. Keen has served as Associate Editor of *Child Development* (1977–1997) and *Psychophysiology* (1972–1975), and as Editor of *SCRD Monographs* (1993–1999). She is a fellow of the American Psychological Association, the American Association for the Advancement of Science, the Acoustical Society of America, and the American Psychological Society. She was President of the International Society on Infant Studies in 1998–2000, received a Distinguished Alumna Award from her undergraduate college, Berea College in 1994, and was given the Distinguished Faculty Award in 1988 and the Samuel F. Conti Faculty Fellowship Award in 2002 from the University of Massachusetts.



### **Jonathan Tudge**

Jonathan Tudge is an expert on children's social cognitive development and education, especially related to Vygotsky's sociocultural cognitive theory. He is currently a professor in the Department of Human Development and Family Studies at the University of North Carolina at Greensboro. He studies developmental issues that stress the mutual influences of the individual, relationships, culture, and history. His multidisciplinary background includes an undergraduate degree in history (Lancaster University, England), a master's degree in sociology (Oxford University, England), two diplo-

mas in early childhood education (both from the University of London, England), a Ph.D. from the Department of Human Development and Family Sciences (Cornell University), and a postdoctorate in developmental psychology (University of Utah). Before becoming a professor, he taught young children in England, Russia, and the United States. Dr. Tudge's primary area of research examines the types of everyday activities and social relationships in which young children become involved in different parts of the world (the United States, Russia, Estonia, Finland, Korea, Kenya, and Brazil), and how these activities and relationships influence their transition to school.



### **William Hoyer**

William Hoyer is one of the world's leading experts on cognitive processes in adult development and aging. He is currently Professor of Psychology at Syracuse University. He received his Ph.D. in experimental psychology from West Virginia University in 1972. Dr. Hoyer is Director of the Graduate Training Program in Experimental Psychology, and an associate of the Gerontology Center at Syracuse University. Dr. Hoyer has contributed over 100 articles, books, and book chapters to the professional literature. Currently, he is Principal Investigator of a five-year research grant from the National Institute on Aging on the aging of cognitive mechanisms. His research program has been continuously supported by the National Institute on Aging since 1981. Because of his expertise in the field of cognitive aging, Dr. Hoyer has served as a member of a number of grant review groups for NIH, NIMH, NSF, the John D. and Catherine T. McArthur Foundation, and other organizations. He is a past chair of the NIH Human Development and Aging study section,

and has served as organizer and chair of a number of panels for federal agencies on health-related research in the behavioral and social sciences. He is a Fellow of the American Psychological Association, the American Psychological Society, and the Gerontological Society of America. He also has served on the editorial boards for a number of professional journals including *Journal of Gerontology: Psychological Sciences* and *Psychology and Aging*, and he is currently on the editorial board of three journals in the field of aging. The major focus of Dr. Hoyer's current research is to specify the mechanisms that account for age-related differences in learning, visual selective attention, and skilled performance. Dr. Hoyer's research contributes knowledge that bears on the understanding of the processes and mechanisms associated with effective cognitive functioning in healthy middle-aged and older individuals. One of the specific findings of Dr. Hoyer's research has been to describe the strategies and skills that enable older adults to perform competently in various task situations despite age-related and illness-related cognitive deficits.



### **Elena Grigorenko**

Elena Grigorenko is one of the world's leading researchers in the areas of individual differences and exceptional children. She is currently a professor of psychology at Yale and Moscow State (Russia) Universities. She obtained her first Ph.D. (in general psychology) from Moscow State University (1990) and a second Ph.D. (in developmental

psychology and genetics) from Yale (1996). Her professional experiences include conducting research, teaching psychology, and designing educational curricula. Dr. Grigorenko has published more than 100 books and articles. She is currently Associate Editor of *Contemporary Psychology*. Dr. Grigorenko has worked with and studied American, Russian, Indian, and African children. Her main interests are individual differences, child development and exceptional children.



### **Jay Belsky**

Jay Belsky is one of the world's leading researchers on infant and early child socioemotional development. He is currently Director of the Institute for the Study of Children, Families and Social Issues and Professor of Psychology at Birkbeck University of London. Professor Belsky obtained his Ph.D. in 1978 in Human Development and Family Studies from Cornell University. Prior to joining the University of London in 1999, Professor Belsky served on the faculty at Penn State University for 21 years, rising to the rank of Distinguished Professor of Human Development. In 1983, he won the Boyd McCandless Award for Distinguished Early Contribution from the Developmental Psychology Division of the American Psychological Association. Dr. Belsky has served on the editorial boards of a number of research journals, including *Child Devel-*

*opment, Developmental Psychology, Journal of Marriage and the Family, Development and Psychopathology, and Human Nature.* His areas of special expertise include child care, parent-child relations during the infancy and early childhood years, the transition to parenthood, child maltreatment, and the evolutionary basis of parent and child functioning. He is the author of more than 200 scientific articles and chapters and the author of several books. Dr. Belsky's research focuses on fathers as well as mothers, marriage as well as parent-child relations, and naturalistic home observations of family interaction patterns. Dr. Belsky's work has been funded, in the U.S., by grants from the National Science Foundation, the National Institute of Mental Health, the National Institute of Child Health and Human Development, the March of Dimes Foundation, and the Sara Scaife Family Foundation. In the U.K., he has received funding from The Wellcome Trust and Department for Education and Skills.



### **Daniel K. Mroczek**

Daniel K. Mroczek is an expert on socioemotional and personality development in adulthood and aging. He received his Ph.D. in psychology from Boston University and also was a postdoctoral fellow at the University of Michigan's Institute for Social Research. Dr. Mroczek is currently a professor at Fordham University in New York City. His

research interests include stability and change in personality traits and psychological well-being across the life span, as well as personality predictors of physical health. His research on estimating trajectories of personality change has been funded by the National Institute on Aging. He has several statistical and methodological interests as well, including the use of mixed models, issues in longitudinal design and data analysis, and psychometrics.



### **James Marcia**

James Marcia, Professor Emeritus at Simon Fraser University, is one of the world's leading experts on identity development. He obtained his Ph.D. in Clinical Psychology from Ohio State University. He was an Assistant and Associate Professor of Psychology at SUNY/Buffalo from 1965–1972 where he directed the Psychological Clinic. Dr. Marcia joined the Simon Fraser faculty in 1972, became a Full Professor there in 1976, and directed the Psychological Clinic from 1986–1988 and 1999–2001. He was also a Visiting Associate Professor at Harvard Medical School in 1981. His publications

include two co-authored books on identity research as well as numerous journal articles, book chapters, and encyclopedia pieces dealing largely with construct validity of Erikson's psychosocial developmental theory. He served as a consulting editor for *The Journal of Youth and Adolescence* and *Journal of Applied Developmental Psychology*. Currently, he is on the editorial board of *The Narrative Study of Lives* and is a Senior Editor of *Identity: An International Journal of Theory and Research*. He has made many presentations at professional conferences, as well as invited addresses and keynote talks, including the Lansdowne Scholar lectures at the University of Victoria.



### **Janet Shibley Hyde**

Janet Shibley Hyde is one of the world's leading experts on gender and sexuality. She currently is Professor of Psychology and Women's Studies at the University of Wisconsin–Madison. Dr. Hyde earned her Ph.D. (1972) in psychology from the University of California, Berkeley. Dr. Hyde has received the Outstanding Teaching Award from the Wisconsin Students Association and the Chancellor's Award for excellence in teaching at the University of Wisconsin. Dr. Hyde's publications include more than 100 scientific articles and chapters with most focusing on topics related to gender and sexuality. In addition, she is the author of two undergraduate textbooks, *Half the Human Experience: The Psychology of Women*,

and *Understanding Human Sexuality*. She has received the Kinsey Award from the Society for the Scientific Study of Sexuality, for her contributions to sexuality research, and the Heritage Award from the Society for the Psychology of Women (Division 35 of the American Psychological Association), for her research on women and gender. Over the past 30 years, Dr. Hyde has held a variety of elected and appointed positions in her field, including editor of *Psychology of Women Quarterly* and associate editor of *The Journal of Sex Research*. She is a past-president of the Society for the Psychology of Women and the Society for the Scientific Study of Sexuality. She also has served on the Board of Directors of the National Council for Research on Women.



### **James Garbarino**

James Garbarino is one of America's leading and most respected advocates for children. He has made outstanding research and conceptual contributions to a number of areas in child development. Dr. Garbarino obtained his Ph.D. from Cornell University and is currently Co-Director of the Family Life Development Center and Elizabeth Lee Vincent Professor of Human Development at Cornell. Prior to his current position, he served as President of the Erikson Institute for Advanced Study in Child Development (1985–1994). Dr. Garbarino has served as consultant or advisor to the National Committee to Prevent Child Abuse, the National Institute for Mental Health, the American Medical Association, the National Black Child Development Institute, the National Science Foundation, the National Resource Center for Children in Poverty, Childwatch International Research Network, the U.S. Advisory Board on Child Abuse and Neglect, and the FBI. In

1991 he undertook missions for UNICEF to assess the impact of the Gulf War upon children in Kuwait and Iraq, and has served as a consultant for programs serving Vietnamese, Bosnian, and Croatian children. Books he has authored or edited include: *And words can hurt forever: How to protect adolescents from bullying, harassment, and emotional violence* (2002), *Parents under siege* (2001), and *Lost boys* (1999). Dr. Garbarino serves as a consultant to television, magazine, and newspaper reports on children and families. The National Conference on Child Abuse and Neglect honored Dr. Garbarino in 1985 with its first C. Henry Kempe Award, in recognition of his efforts on behalf of abused and neglected children. He is a past President of the American Psychological Association's Division on Child, Youth, and Family Services, and has received the American Psychological Association's Award for Distinguished Professional Contributions to Public Service. In 2003, he was given the Outstanding Service to Children Award of the Chicago Association for the Education of Young Children.



### **Allan Wigfield**

Allan Wigfield is one of the world's leading experts on children's and adolescents' motivation, achievement, and education. He is currently Professor of Human Development and Distinguished Scholar-Teacher at the University of Maryland, College Park. His research focuses on the development of children's motivation in different areas, including reading. Dr. Wigfield has authored more than 80 peer-

reviewed journal articles and book chapters on children's motivation. He is associate editor of *Child Development* and a Fellow of Division 15 of the American Psychological Association. He currently is collaborating with John Guthrie on a National Science Foundation funded study of how two reading programs, Concept Oriented Reading Instruction and Strategy Instruction, influence elementary school-aged children's reading motivation and comprehension.



### **Robert Kastenbaum**

Robert Kastenbaum, former Professor of Gerontology at Arizona State University, is widely recognized as one of the world's leading experts on death and dying. He is a psychologist with an interdisciplinary approach to life-course human development with particular emphasis on death-related situations and experiences. He has been active as therapist, researcher, program director, and educator since receiving his doctorate at the University of Southern California.

Kastenbaum's books include *The Psychology of Death; Death, Society, and Human Experience*; and *On Our Way: The Final Passage through Life and Death*. Dr. Kastenbaum has served as director of a geriatric hospital and is cofounder of the National Caucus on Black Aging. He has been editor of the *International Journal of Aging and Human Development* and *Omega: Journal of Death and Dying*. He also explores themes of love and death in theater pieces such as the opera *Closing Time* and the musical play *Parlor Games*.

# To the Student

This book provides you with important study tools to help you more effectively learn about life-span development. Especially important is the learning goals system that is integrated throughout each chapter. In the visual walk-through of features, pay special attention to how the learning goals system works.

## THE LEARNING GOALS SYSTEM

Using the learning goals system will help you to learn the material more easily. Key aspects of the learning goals system are the learning goals, chapter maps, Review and Reflect, and Reach Your Learning Goals sections, which are all linked together.

At the beginning of each chapter, you will see a page that includes both a chapter outline and three to six learning goals that preview the chapter's main themes and underscore the

most important ideas in the chapter. Then, at the beginning of each major section of a chapter, you will see a mini-chapter map that provides you with a visual organization of the key topics you are about to read in the section. At the end of each section is Review and Reflect, in which the learning goal for the section is restated, a series of review questions related to the mini-chapter map are asked, and a question that encourages you to think critically about a topic related to the section appears. At the end of the chapter, you will come to a section titled Reach Your Learning Goals. This includes an overall chapter map that visually organizes all of the main headings, a restatement of the chapter's learning goals, and a summary of the chapter's content that is directly linked to the chapter outline at the beginning of the chapter and the questions asked in the Review part of the Review and Reflect sections within the chapter. The Summary essentially answers the questions asked in the within-chapter Review and Reflect sections.

# The Learning Goals System

## Chapter-Opening Outline and Learning Goals

### Introduction

#### Chapter Outline

#### Learning Goals

<p><b>THE LIFE-SPAN PERSPECTIVE</b></p> <p>The Importance of Studying Life-Span Development The Historical Perspective Characteristics of the Life-Span Perspective</p>	<b>1</b>	Explain the distinctive features of a life-span perspective on development
<p><b>THE NATURE OF DEVELOPMENT</b></p> <p>Biological, Cognitive, and Socioemotional Processes Periods of Development Conceptions of Age Developmental Issues</p>	<b>2</b>	Identify the most important processes, periods, and issues in development
<p><b>THEORIES OF DEVELOPMENT</b></p> <p>Psychoanalytic Theories Cognitive Theories Behavioral and Social Cognitive Theories Ethological Theory Ecological Theory An Eclectic Orientation</p>	<b>3</b>	Describe five theoretical approaches to human development
<p><b>RESEARCH IN LIFE-SPAN DEVELOPMENT</b></p> <p>Methods for Collecting Data Research Designs Time Span of Research Ethics</p>	<b>4</b>	Explain how research on life-span development is conducted

## Review and Reflect

218 Chapter 6 Cognitive Developmental Approaches

**An Alternative View** Neo-Piagetians argue that Piaget got some things right but that his theory needs considerable revision. They give more emphasis to how children use attention, memory, and strategies to process information (Case, 1987, 1999; Case & Muehle, 2001). They especially believe a more accurate portrayal of children process information, the particular task involved, and the division of problems into smaller, more precise steps (Demetriou, 2001). In chapter 7, we will further discuss these aspects of children's thought.

#### Review and Reflect: Learning Goal 2

#### 2 Apply Piaget's theory to education and evaluate Piaget's theory

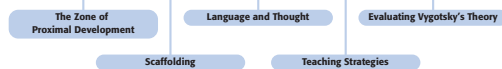
##### REVIEW

- How can Piaget's theory be applied to educating children?
- What are some key contributions and criticisms of Piaget's theory?


##### REFLECT

- How might thinking in formal operational ways rather than concrete operational ways help students to develop better study skills?

### 3 VYGOTSKY'S THEORY OF COGNITIVE DEVELOPMENT



Piaget's theory is a major developmental theory. Another developmental theory that focuses on children's cognition is Vygotsky's theory. Like Piaget, Vygotsky emphasized that children actively construct their knowledge and understanding. In Piaget's theory, children develop ways of thinking and understanding by their actions and interactions with the physical world. In Vygotsky's theory, children are more often described as social creatures than in Piaget's theory. They develop their ways of thinking and understanding primarily through social interaction. Their cognitive development depends on the tools provided by society, and their minds are shaped by the cultural context in which they live (Kuzulin & others, 2003).

We briefly described Vygotsky's theory in chapter 1.  Here we take a closer look at his ideas about how children learn and his view of the role of language in cognitive development.

#### The Zone of Proximal Development

**Zone of proximal development (ZPD)** is Vygotsky's term for the range of tasks that are too difficult for the child to master alone but that can be learned with guidance and assistance of adults or more-skilled children. Thus, the lower limit of the ZPD is the level of skill reached by the child working independently. The upper limit is the level of additional responsibility the child can accept with the assistance of an able instructor (see figure 6.10). The ZPD captures the child's cognitive skills that are in the process of maturing and can be accomplished only with the assistance of a more-skilled person (Klinginger, 2002). Vygotsky (1962) called these the "buds" or

**neo-Piagetians** Developmentalists who have elaborated on Piaget's theory, emphasizing the importance of information processing.

#### zone of proximal development (ZPD)

Vygotsky's term for tasks too difficult for children to master alone but that can be mastered with assistance.

## Mini-Chapter Map

### Cross-Linkage

This refers you to the primary discussion of key concepts. A specific page reference appears in the text with a backward-pointing arrow each time a key concept occurs in a chapter subsequent to its initial coverage. When you see the cross-linkage, go back to the page listed to obtain a foundation for the concept.

An insecurely attached infant, by contrast, avoids the mother or is ambivalent toward her, fears strangers, and is upset by minor, everyday separations. If early attachment to a caregiver is important, it should relate to a child's social behavior later in development. For some children, early attachments seem to foreshadow later functioning (Egeland & Carlson, 2004; Sroufe, 2002). For other children, there is little continuity (Thompson, Easterbrooks, & Walker, 2003). For example, in one longitudinal study, attachment classification in infancy did not predict attachment classification at 18 years of age (Lewis, 1997). In this study, the best predictor of an insecure attachment classification at 18 was the occurrence of divorce in the intervening years. Consistency in caregiving over a number of years is likely an important factor in connecting early attachment and the child's functioning later in development.

Not all developmentalists believe that attachment in infancy is the only path to competence in life. Indeed, some developmentalists believe that too much emphasis has been placed on the attachment bond in infancy. Jerome Kagan (1987, 2000), for example, believes that infants are highly resilient and adaptive; he argues that they are evolutionarily equipped to stay on a positive developmental course, even in the face of wide variations in parenting. Kagan and others stress that genetic and temperament characteristics play more important roles in a child's social competence than the attachment theorists, such as Bowlby and Ainsworth, are willing to acknowledge (Chaudhuri & Williams, 1999; Young & Shaffer, 1995). For example, infants may have inherited a low tolerance for stress. Thus, rather than an insecure attachment bond, may be responsible for their inability to get along with peers.

Another criticism of attachment theory is that it ignores the diversity of socializing agents and contexts that exists in an infant's world. In some cultures, infants show attachments to many people. Among the Hausa (who live in Nigeria), both grandmothers and siblings provide a significant amount of care for infants (Harkness & Super, 1995). Infants in agricultural societies tend to form attachments to older siblings, who are assigned a major responsibility for younger siblings' care.

Researchers recognize the importance of competent, nurturant caregivers in an infant's development (Maccoby, 1999; Malle & others, 2001; Parke, 2001). At issue, though, is whether or not secure attachment, especially to a single caregiver, is critical.

Despite such criticisms, there is ample evidence that security of attachment is important to development (Akins & Goldberg, 2004; Thompson, Easterbrooks, & Walker, 2003). Secure attachment in infancy is important because it reflects a positive parent-infant relationship and provides the foundation that supports healthy socioemotional development in the years that follow.

**Caregiving Styles and Attachment Classification** Is the style of caregiving linked with the quality of the infant's attachment? Securely attached babies have caregivers who are sensitive to their signals and are consistently available to respond to their infants' needs (Gao, Elliot, & Waters, 1999; Main, 2000). These caregivers often let their babies have an active part in determining the onset and pacing of interaction in the first year of life. One recent study found that maternal sensitivity in parenting was linked with secure attachment in infants in two different cultures: the United States and Colombia (Carbonell & others, 2002).

How do the caregivers of insecurely attached babies interact with them? Caregivers of avoidant babies tend to be unavailable or rejecting (Berlin & Cassidy, 2000). They often don't respond to their babies' signals and have little physical contact with them. When they do interact with their babies, they may behave in an angry and irritable way. Caregivers of resistant babies tend to be inconsistent; sometimes they respond to their babies' needs, and sometimes they don't. In general, they tend not to be very affectionate with their babies and show little synchrony when interact-



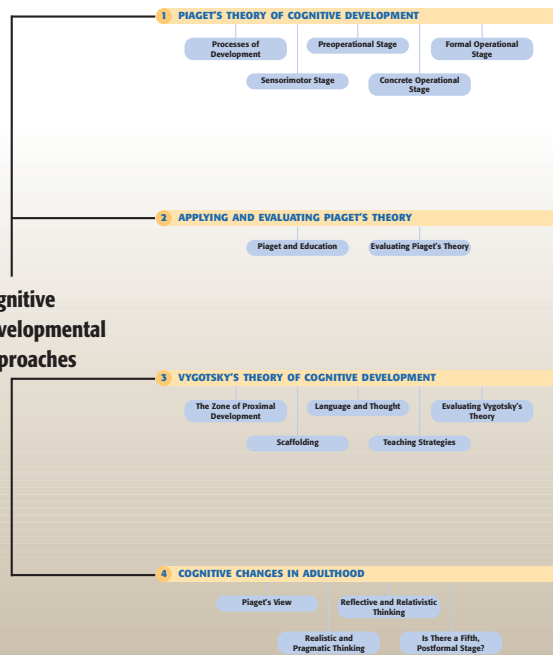
In the Hausa culture, siblings and grandmothers provide a significant amount of care for infants. How might this practice affect attachment?

## Critical Thinking and Content Questions in Photograph Captions

Most photographs have a caption that ends with a critical thinking or knowledge question in italics to stimulate further thought about a topic.

## Reach Your Learning Goals

### Reach Your Learning Goals



# Other Learning System Features

## Contexts of Life-Span Development Interlude

Once in each chapter a Contexts of Life-Span Development interlude provides information about contextual influences—especially related to diversity and culture—linked to a chapter topic.

though Bugs is a Warner Brothers character who would never appear at a Disney theme park.

Many other studies have demonstrated that questions or suggestions of false information can distort memories. These findings have created great concern about finding ways to avoid implanting false memories among eyewitnesses and ways to determine the accuracy of the memories of eyewitnesses at trials.

In their study of memory, researchers have not extensively examined the roles that socio-cultural factors might play (Park & Gutches, 2002). In the Contexts of Life-Span Development interlude, we will explore how culture and gender might be linked with memory.



### Contexts of Life-Span Development Culture, Gender, and Memory

A culture sensitizes its members to certain objects, events, and strategies, which in turn can influence the nature of memory (Mistry & Rogoff, 1994). Sir Frederick Bartlett believed that a person's background, which is encoded in schemas, is revealed in the way the person reconstructs a story. This effect of cultural background on memory is called the *cultural specificity hypothesis*. It states that cultural experiences determine what is relevant in a person's life and, thus, what the person is likely to remember. For example, imagine that you live on a remote island in the Pacific Ocean and make your livelihood by fishing. Your memory about how weather affects fishing is likely to be highly developed. By contrast, a Pacific Islander might be hard-pressed to encode and recall the details of one hour of MTV. The culture specificity hypothesis also refers to subgroups within a culture. For example, many basketball fans in the U.S. can recount an impressive array of National Basketball Association (NBA) statistics. A foreign audience might know the informal and Latin names

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memory for an emotio  
• Males are better than  
spatial working memoi  
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On many memory tasks,  
when they do occur, they

276 Chapter 8 Intelligence



### Applications in Life-Span Development Project Spectrum

What is a Spectrum classroom like? Teachers do not try to evoke intelligences directly by using materials that are labeled "spatial" or "verbal." But the classroom has rich and engaging materials that can stimulate a range of intelligences. For example, in a naturalist corner there are biological specimens that students can explore and compare. This area stimulates students' sensory capacities and logical thinking skills. In a storytelling area, students create imaginative tales with stimulating props and design their own storyboards. This area encourages children to use their linguistic, dramatic, and imaginative skills. In a building corner, students can construct a model of their classroom and arrange small-scale photographs of the students and the teachers in their class using spatial and personal skills. In all, the Spectrum classroom has 12 such areas that are designed to bring out students' multiple intelligences.



Student in a Spectrum classroom engaged in a science project. What combinations of materials might you expect to find in other corners of a Spectrum classroom?

The Spectrum classroom can identify skills that typically are not tapped in a regular classroom. In one first-grade Spectrum classroom, a boy who was a product of a highly conflicted broken home was at risk for school failure. However, when Project Spectrum was introduced the boy was identified as especially skilled in one area. He was the best student in the class at taking apart and putting together common objects, such as a doorknob and a food grinder. His teacher became encouraged when she found that he possessed this skill and his overall school performance began to improve.

In addition to identifying unexpected strengths in students, Project Spectrum also can pinpoint undetected weaknesses. Gregory, who was especially skilled in math computation and conceptual knowledge, was doing very well in the first grade. However, he performed poorly in a number of Spectrum areas. Gregory did well only in the areas in which he needed to give a correct answer and a person in authority gave it to him. As a result of the Spectrum Project, Gregory's teacher began to search for ways to encourage him to take risks on more open-ended tasks, to try different ways of doing things, and to realize that it is okay to make mistakes.

**Sternberg's Triarchic Theory** Like Gardner, Robert J. Sternberg (1986, 1999, 2002, 2003) believes that traditional IQ tests fail to measure some important dimensions of intelligence. Sternberg proposes a **triarchic theory of intelligence** with three main types of intelligence: analytical, creative, and practical.

**Analytical, Creative, and Practical Intelligence** To understand what analytical, creative, and practical intelligence mean, let's look at examples of people who reflect these three types of intelligence:

- Consider Latisha, who scores high on traditional intelligence tests such as the Stanford-Binet and is a star analytical thinker. Sternberg calls Latisha's analytical thinking and abstract reasoning *analytical intelligence*. It is the closest to what has traditionally been called intelligence and what is commonly assessed by intelligence tests. In Sternberg's view of analytical intelligence, the basic unit of analytical intelligence is a *component*, which is a basic unit of information process-

**triarchic theory of intelligence** Sternberg's theory that intelligence consists of componential intelligence, experiential intelligence, and contextual intelligence.

## Research in Life-Span Development Interlude

One Research in Life-Span interlude appears in every chapter. The research interludes describe a research study or program and are designed to acquaint you with how research in life-span development is conducted.

108 Chapter 3 Physical Development and Biological Aging

sights, sounds, smells, touches, language, and eye contact help shape the brain's neural connections (Black, 2001).

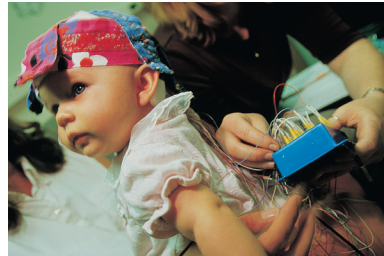
The unfolding of developmental changes in the brain likely holds some important keys to understanding why individuals think and behave the way they do. But as the Research in Life-Span Development interlude indicates, studying the brains of babies is not an easy task.



### Research in Life-Span Development Studying Babies' Brains

Studying the brain's development in infancy is not easy. Even the latest brain-imaging technologies can't make out fine details—and they can't be used on babies. PET scans (in which the amount of specially treated glucose in various areas of the brain is measured and then analyzed by computer) pose a radiation risk, and infants wriggle too much for an MRI (in which a magnetic field is created around the body and radio waves are used to construct images of brain tissue and biochemical activity) (Marcus, Mulrine, & Wong, 1999).

However, one researcher who is making strides in finding out more about the brain's development in infancy is Charles Nelson (1999, 2000, 2001, 2003). In his research, he might attach up to 128 electrodes to a baby's scalp. He has found that even newborns produce distinctive brain waves that reveal they can distinguish their mother's voice from another woman's, even while they are asleep. Other research conducted by Nelson found that by 8 months of age babies can distinguish the picture of a wooden toy they were allowed to feel, but not see, from pictures of other toys. This achievement coincides with the development of neurons in the brain's hippocampus (an important structure in memory) that enable the infant to remember specific items and events.



In Charles Nelson's research, electrodes are attached to a baby's scalp to measure the brain's activity to determine its role in the development of an infant's memory. Why is it so difficult to measure infants' brain activity?

## Applications in Life-Span Development Interlude

Every chapter has one Applications in Life-Span Development interlude, which provides applied information about parenting, education, or health and well-being related to a topic in the chapter.



## Key Terms and Glossary


Key terms appear in boldface. Their definitions appear in the margin near where they are introduced.

Cognitive developmental approaches place a special emphasis on how individuals actively construct their thinking. They also focus heavily on how thinking changes from one point in development to another. In this chapter, we will highlight the cognitive developmental approaches of Jean Piaget and Lev Vygotsky. We also will explore the possibility that adults think in a qualitatively more advanced way than adolescents do.

### 1 PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

Processes of Development      Preoperational Stage      Formal Operational Stage

Sensorimotor Stage      Concrete Operational Stage



Piaget thought that, just as our physical bodies have structures that enable us to adapt to the world, we build mental structures that help us to adapt to the world. *Adaptation* involves adjusting to new environmental demands. Piaget also stressed that children actively construct their own cognitive worlds; information is not just poured into their minds from the environment. He sought to discover how children at different points in their development think about the world and how these systematic changes occur. [▶ P. 22.](#)

#### Processes of Development

Poet Nora Perry asked, "Who knows the thoughts of the child?" As much as anyone, Piaget knew. Through careful observations of his own three children—Laurent, Lucienne, and Jacqueline—and inquisitive interviews of other children, Piaget changed our perceptions of the way children think about the world.

What processes do children use as they construct their knowledge of the world? Piaget believed that these processes are especially important in this regard: schemes, assimilation, accommodation, organization, equilibrium, and equilibration.

#### Schemes

Piaget (1954) said that as the child seeks to construct an understanding of the world, the developing brain creates **schemes**. These are actions or mental representations that organize knowledge. In Piaget's theory, behavioral schemes (physical activities) characterize infancy, and mental schemes (cognitive activities) develop in childhood. A baby's schemes involve simple actions that can be performed on objects such as sucking, looking, and grasping. Older children have schemes that include strategies and plans for solving problems. For example, a 5-year-old might have a scheme that involves the strategy of classifying objects by size, shape, or color. By the time we have reached adulthood, we have constructed an enormous number of diverse schemes, ranging from how to drive a car to balancing a budget to the concept of fairness.

#### Assimilation and Accommodation

To explain how children use and adapt their schemes, Piaget offered two concepts: assimilation and accommodation. **Assimilation** occurs when children incorporate new information into their existing schemes. **Accommodation** occurs when children adjust their schemes to fit new information and experiences. Consider an 8-year-old girl who is given a hammer and nails to hang a picture on the wall. She has never used a hammer, but from experience and observation she realizes that a hammer is an object to be held, that it is swung by the handle to hit the nail, and that it is usually swung a number of times. Recognizing each of these things, she fits the current task into her existing scheme.

**schemes** In Piaget's theory, actions or mental representations that organize knowledge.

**assimilation** Piagetian concept of the incorporation of new information into existing schemes.

**accommodation** Piagetian concept of adjusting schemes to fit new information and experiences.

200

Key terms also are listed and page-referenced at the end of each chapter.

transform the classroom and establish a meaningful context for instruction.

- Like Piaget, Vygotsky emphasized that children actively construct their understanding of the world. Unlike Piaget, he did not propose stages of cognitive development, and he emphasizes that children construct knowledge through social interaction. In Vygotsky's theory, children depend on tools provided by the culture, which determines which skills they will develop. Some critics say that Vygotsky overemphasized the role of language.

#### 4 Describe cognitive changes in adulthood

- Piaget said that formal operational thought, entered at 11 to 15 years of age, is the final cognitive stage, although adults are more knowledgeable than adolescents.
- Some experts argue that the idealism of Piaget's formal operational stage declines in young adults, being replaced by more realistic, pragmatic thinking.
- Perry said that adolescents often engage in dualistic, absolutist thinking, whereas young adults are more likely to think reflectively and relativistically.
- Postformal thought is reflective, relativistic, and provisional; realistic; and open to emotions and subjective.

#### Key Terms

schemes 200	operations 207	horizontal decalage 211	neo-Piagetians 218
assimilation 200	symbolic function 208	seriation 213	zone of proximal development (ZPD) 218
accommodation 200	substage 208	transitivity 213	scaffolding 219
organization 201	egocentrism 208	formal operational stage 213	social constructivist approach 222
equilibration 201	animism 208	hypothetical-deductive reasoning 214	postformal thought 225
sensorimotor stage 202	intuitive thought substage 209	adolescent egocentrism 214	
object permanence 204	centration 209	imaginary audience 214	
A Error 207	conservation 209	personal fable 215	
preoperational stage 207	concrete operational stage 211		

#### Key People

Jean Piaget 200	Barbel Inhelder 208	David Elkind 214	K. Warner Schale 224
Renée Ballargeon 205	Rochel Gelman 211	Lev Vygotsky 218	William Perry 224

## Glossary

**A**

**Aberor** The Piagetian object-permanence concept in which an infant progressing into substage 4 makes frequent mistakes, selecting the familiar hiding place (A) rather than the new hiding place (B). 207

**acceptance** Kübler-Ross' fifth stage of dying, in which the dying person develops a sense of peace, an acceptance of her or his fate, and, in many cases, a desire to be left alone. 612

**accommodation** Piagetian concept of adjusting schemes to fit new information and experiences. 200

**accommodation of the eye** The eye's ability to focus and maintain an image on the retina. 185

**active euthanasia** Death induced deliberately, as by injecting a lethal dose of a drug. 603

**active (niche-picking) genotype-environment correlations** Correlations that exist when children seek out environments they find compatible and stimulating. 63

**activity theory** The theory that the more active and involved older adults are, the more likely they are to be satisfied with their lives. 539

**addiction** A pattern of behavior characterized by an overwhelming involvement with using a drug and securing its supply. 155

**adolescent egocentrism** The heightened self-consciousness of adolescents, which is reflected in adolescents' beliefs that others are as interested in them as they are in themselves, and in adolescents' sense of personal uniqueness and invincibility. 214

**adoption study** A study in which investigators seek to discover whether, in behavior and psychological characteristics, adopted children are more like their adoptive parents, who provided a home environment, or more like their biological parents, who contributed their heredity. Another form of the adoption study is to compare adoptive and biological siblings. 62

**aerobic exercise** Sustained activity that stimulates heart and lung functioning. 152

**affectionate love** Also called companionate love, this type of love occurs when individuals desire to have another person near and have a deep, caring affection for the person. 359

**affordances** Opportunities for interaction offered by objects that are necessary to perform activities. 178

**ageism** Prejudice against other people because of their age, especially prejudice against older adults. 539

**AIDS** A sexually transmitted infection caused by the human immunodeficiency virus (HIV), which destroys the body's immune system. 423

**altruism** An unselfish interest in helping another person. 458

**Alzheimer's disease** A progressive, irreversible brain disorder characterized by a gradual deterioration of memory, reasoning, language, and, eventually, physical function. 139

**androgens** A main class of sex hormones, an important one of which is testosterone, that promote the development of male genitalia and secondary sex characteristics. 97

**androgens** The main class of male sex hormones. 402

**androgyny** The presence of a high degree of feminine and masculine characteristics in the same individual. 411

**anger** Kübler-Ross' second stage of dying in which the dying person's denial gives way to anger, resentment, rage, and envy. 612

**anger cry** A cry similar to the basic cry but with more excess air forced through the vocal cords (associated with exasperation or rage). 336

**animism** A fact of preoperational thought—the belief that inanimate objects have "like-like" qualities and are capable of action. 208

**anorexia nervosa** An eating disorder that involves the relentless pursuit of thinness through starvation. 147

**Appar Scale** A widely used method to assess the health of newborns at 1 and 5 minutes after birth. The Appar Scale evaluates infants' heart rate, respiratory effort, muscle tone, body color, and reflex irritability. 86

**aphasia** A language disorder resulting from brain damage that involves a loss of the ability to use words. 319

**assimilation** Piagetian concept of the incorporation of new information into existing schemes. 200

**associative play** Play that involves social interaction with little or no organization. 535

**attachment** A close emotional bond between two people. 348

**attention** Concentrating and focusing mental resources. 237

**attention deficit hyperactivity disorder (ADHD)** A disability in which children consistently show one or more of the following characteristics: (1) inattention, (2) hyperactivity, and (3) impulsivity. 574

**attribution theory** The theory that, in their effort to make sense out of their own behavior or performance, individuals are motivated to discover its underlying causes. Attributions are perceived causes of outcomes. 581

**authoritarian parenting** A restrictive, punitive style in which parents exhort the child to follow their directions and to respect their work and effort. Firm limits are placed on the child and little verbal exchange is allowed. 498

**authoritative parenting** A style that encourages children to be independent but still places limits and controls on children's actions; extensive verbal give-and-take is allowed and parents are warm and nurturant toward the child. 498

**automaticity** The ability to process information with little or no effort. 234

**autonomous morality** The second stage of moral development in Piaget's theory, displayed by older children (about 10 years of age and older). The child becomes aware that rules and laws are created by people and that, in judging an action, one should consider the actor's intentions as well as the consequences. 443

**average children** Children who receive an average number of both positive and negative nominations from their peers. 525

**B**

**bargaining** Kübler-Ross' third stage of dying in which the dying person develops the hope that death can somehow be postponed. 612

**basal metabolic rate (BMR)** The minimal amount of energy a person uses in a resting state. 145

**basic cry** A rhythmic pattern usually consisting of a cry, a brief silence, a shorter inspiratory whistle that is higher pitched than

G-1

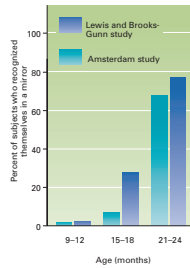
Key terms are alphabetically listed, defined, and page-referenced in a Glossary at the end of the book.

## Key People

The most important theorists and researchers in the chapter are listed and page-referenced at the end of each chapter.

## Quotations

These appear occasionally in the margins to stimulate further thought about a topic.



**FIGURE 11.1 The Development of Self-Recognition in Infancy**  
The graph shows the findings of two studies in which infants less than 1 year of age did not recognize themselves in the mirror. A slight increase in the percentage of infant self-recognition occurred around 15 to 18 months of age. By 2 years of age, a majority of children recognized themselves.

How do preschool children understand the self? Young children generally confuse self, mind, and body (Broughton, 1978). Most young children conceive of the self as part of the body, which usually means the head. For them, the self can be described along many material dimensions, such as size, shape, and color.

Preschool children think of themselves and define themselves in physical terms. "Physical" in this case includes physical actions as well as body image and material possessions. Young children distinguish themselves from others through many physical and material attributes. Says 4-year-old Sandra, "I'm different from Jennifer because I have brown hair and she has blond hair." Says 4-year-old Ralph, "I am different from Hank because I am taller, and I am different from my sister because I have a bicycle." The *active dimension* is a central component of the self in early childhood (Keller, Ford, & Meacham, 1978). For example, preschool children often describe themselves in terms of activities such as play. In sum, in early childhood, children often describe themselves in terms of a physical self or an active self.

Preschool children also develop an awareness of how their present selves are causally bound to previous states of the self (Povinelli & Simon, 1998). For example, in one study, 2-, 3-, and 4-year-old children briefly saw video images of themselves (Povinelli, Perillous, & Landau, 1996). The images showed the children playing an unusual game and revealed that one experimenter had covertly placed a large sticker on each child's head. Few 2- and 3-year-olds reached up to their heads to remove the sticker while a majority of the 4- and 5-year-olds did so immediately after the delayed tape revealed that the experimenter had placed it there.

**Middle and Late Childhood** In middle and late childhood, self-understanding increasingly shifts away from defining the self in terms of external characteristics. Children develop a more complex self-understanding with three key characteristics.

First, in middle and late childhood, children shift toward defining themselves in terms of internal characteristics. They now recognize the difference between inner and outer states, and they are also more likely than young children to include subjective inner states in their definition of self. For example, in one investigation, second-grade children were much more likely than younger children to name psychological characteristics (such as preferences or personality traits) in their self-definition and less likely to name physical characteristics (such as eye color or possessions) (Aboud & Skerry, 1983). Eight-year-old Todd says, "I am smart and I am popular." Ten-year-old Tina

**Know thyself, for once we know ourselves, we may learn how to care for ourselves, but otherwise we never shall.**  
—SOCRATES  
*Greek Philosopher, 5th Century B.C.*



Concepts of Person and Self  
Self-Development in Infancy

## The Internet

Web icons appear a number of times in each chapter. They signal you to go to the book's website where you will find connecting links that provide additional information on the topic discussed in the text. The labels under the Web icon appear as Web links at the Santrock *A Topical Approach to Life-Span Development*, second edition, website, under that chapter for easy access.

## E-Learning Tools

This feature appears at the end of each chapter and consists of three parts: *Taking It to the Net* Internet problem-solving exercises, *Self-Assessment*, which consists of one or more self-evaluations, and *Health and Well-Being, Parenting, and Education*, which provides an opportunity to practice decision-making skills related to health and well-being, parenting, and education. By going to the Online Learning Center for this book, you will find many learning activities to improve your knowledge and understanding of the chapter.



### E-Learning Tools

Connect to [www.mhhe.com/santrock1d2](http://www.mhhe.com/santrock1d2) to research the answers and complete these exercises. In addition, you'll find a number of other resources and valuable study tools for chapter 11, "The Self, Identity, and Personality," on the Student CD-ROM that came with this book.

#### Taking It to the Net

1. Ted is the activities director at an adult retirement community. A friend who is a social worker suggested that Ted might want to develop a program in which the residents engage in the process of reminiscence and life review. What benefits might the residents gain from such an activity?
2. Janice, who has recently been appointed principal of a high school that has a large population of Middle Eastern, Asian, and Hispanic students, wants to conduct in-service training for the school's teachers to help them understand the challenges the ethnic students face as they strive to achieve their self-identity and ethnic identity. What challenges do the ethnic students face in resolving their identity crises, and how can the school assist them?

3. Eduardo is vice president for human resources at a 200-employee manufacturing plant. He wants to use a personality assessment for job selection and to help him plan interventions for employees who have job-related problems, such as poor motivation, personality problems with co-workers, and conflicts with supervisors. Would an assessment based on the five-factor model of personality be a good choice?

#### Self Assessment

To evaluate your self-esteem, identity, and personality, complete these self-assessments:

- *My Self-Esteem*
- *Exploring My Identity*
- *How Generative Am I?*
- *Am I Introverted or Extraverted?*

#### Health and Well-Being, Parenting, and Education

Build your decision-making skills by trying your hand at the health and well-being, parenting, and education "Scenarios."

## Careers in Life-Span Development Appendix

A Careers in Life-Span Development appendix that describes a number of careers appears following chapter 17.

### Appendix *Careers in Life-Span Development*

Some of you may be quite sure about what you plan to make your life's work. Others of you might not have decided on a major yet and might be uncertain about which career path you want to follow. Each of us wants to find a rewarding career and enjoy the work we do. The field of life-span development offers an amazing breadth of career options that can provide extremely satisfying work.

If you decide to pursue a career in life-span development, what career options are available to you? Many college and university professors teach courses in many different areas of life-span development, education, family development, nursing, and medicine. Teachers impart knowledge, understanding, and skills to children and adolescents. Counselors, clinical psychologists, nurses, and physicians help people of different ages to cope more effectively with their lives and improve their well-being. Various professionals work with families to improve the quality of family functioning.

Although an advanced degree is not absolutely necessary in some areas of life-span development, you usually can considerably expand your opportunities (and income) by obtaining a graduate degree. Many careers in life-span development pay reasonably well. For example, psychologists earn well above the median salary in the United States. Also, by working in the field of life-span development, you can guide people in improving their lives, understand yourself and others better, possibly advance the state of knowledge in the field, and have an enjoyable time while you are doing these things.

If you are considering a career in life-span development, would you prefer to work with infants? children? adolescents? older adults? As you go through this term, try to spend some time with people of different ages. Observe their behavior. Talk with them about their lives. Think about whether you would like to work with people of this age in your life's work.

Another important aspect of exploring careers is to talk with people who work in various jobs. For example, if you have some interest in becoming a school counselor, call a school, ask to speak with a counselor, and set up an appointment to discuss the counselor's career and work. If you have an interest in becoming a nurse, think about whether you would rather work with babies, children, adolescents, or older adults. Call the nursing department at a hospital, ask to speak with the nursing department, and set up an appointment to speak with the nursing coordinator about a nursing career.

Something else that should benefit you is to work in one or more jobs related to your career interests while you are in college. Many colleges and universities have internships or work experiences for students who major in such fields as life-span development. Some of these opportunities are for course credit or pay; others are strictly on a volunteer basis. Take advantage of these opportunities. They can provide you with valuable experiences to help you decide if this is the right career area for you, and they can help you get into graduate school, if you decide you want to go.

In the upcoming sections, we will profile a number of careers in four areas: education/research; clinical/counseling; medical/nursing/physical; and families/relationships. These are not the only career options in life-span development, but they