



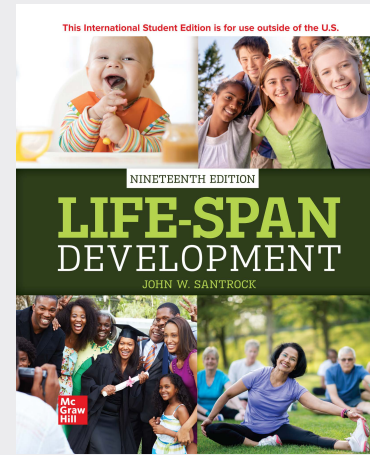
LIST OF CHANGES

Life-Span Development

19th Edition

John Santrock

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A significant reason why *Life-Span Development* has worked so well in the classroom is the painstaking review that goes into confirming the text provides the latest research on all topic areas. This new edition features more than 1,500 citations from 2020, 2021, and 2022, reflecting relevant findings by a diverse group of researchers. Culture and diversity have been extensively updated, and the new Guide to Diversity, Equity and Inclusion identifies where these changes will be found. New research and content that have especially been expanded for this edition include health and well-being; development of the brain; technology; and successful aging. Numerous updates based on recent world events appear throughout, including new research, statistics, and the effects of the COVID-19 pandemic. Additionally, all of the Connecting with Careers profiles have been updated, and many new profiles introduce the reader to more careers and a very diverse group of active professionals.

Take your students higher.

McGraw Hill Connect® is a complete course platform. It helps you deliver cohesive learning experiences through structured content and interactivity. When students engage with Connect, their individual needs become clear. This enables you to assign coursework, aligned to the levels of Bloom's Taxonomy, that keeps your students moving forward on their unique learning path from foundational cognitive skills to higher-order thinking and application. The chart below shows how each asset type aligns to Bloom's Taxonomy.

LOWER  HIGHER

ASSET	DESCRIPTION	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
SmartBook® 2.0	McGraw Hill's adaptive reading experience has been made more accessible, productive, and mobile. Rooted in advanced learning science principles, SmartBook 2.0 delivers a personalized experience, focusing students on their learning gaps and ensuring they get the most out of the time they spend studying.	✓	✓				
Power of Process	Power of Process helps students improve critical-thinking skills and allows instructors to assess these skills efficiently and effectively in an online environment. Available through Connect, preloaded journal articles are available for instructors to assign or instructors can upload their own. Using a scaffolded framework such as understanding, synthesizing, and analyzing, Power of Process moves students toward higher-level thinking and analysis.			✓	✓	✓	
Writing Assignment	Writing Assignment delivers a learning experience that helps students improve their written communication skills and conceptual understanding. Faculty can assign, monitor, grade, and provide feedback on writing projects efficiently. Built-in grammar and writing review helps students improve writing quality while an originality check helps them identify potential plagiarism before submission. End result? Improved workplace skills of writing and critical thinking.			✓	✓	✓	
Quest	An engaging and innovative learning game, Quest: Journey Through the Lifespan provides students with opportunities to apply content from their human development curriculum to real-life scenarios. Students play unique characters who range from 9-months-old to 80-years-old and make decisions that apply key concepts and theories as they negotiate events in an array of authentic environments	✓	✓				

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Milestones Videos	<p>The McGraw Hill Milestones video series is an observational tool that allows students to experience life as it unfolds, from infancy to late adulthood. This groundbreaking, longitudinal video series tracks the development of real children as they progress through the early stages of physical, social, and emotional development in their first few weeks, months, and years of life. Assignable and assessable within Connect, Milestones also includes interviews with adolescents and adults to reflect development through the entire life span.</p> <p>New to this edition, Milestones are available in a more engaging, WCAG-compliant format.</p>	✓	✓				
Concept Clip	<p>Concept Clips offer dynamic, colorful graphics and stimulating animations that break down some of psychology's most difficult concepts in a step-by-step manner, aiding in retention. Now with audio narration, this edition also includes new Concept Clips on topics such as object permanence and conservation, as well as theories and theorists such as Bandura's social cognitive theory, Vygotsky's sociocultural theory, Buss's evolutionary theory, and Kuhl's language development theory.</p> <p>Also new to this edition, Concept Clips feature a more modern visual style, updated scripts and assessment items, and enhanced accessibility.</p>	✓	✓				
Interactivities	<p>Assignable through Connect, Interactivities engage students with content through experiential activities. New and updated activities include Prenatal Development and Kohlberg's Moral Reasoning.</p>		✓	✓			

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NewsFlash	Located in Connect, NewsFlash is a multimedia assignment tool that ties current news stories, TedTalks, blogs, and podcasts to key psychological principles and learning objectives. Students interact with relevant media and are assessed on their ability to connect the content to the research findings and course material. NewsFlash is updated once a year and uses expert sources to cover a wide range of topics, including emotion, personality, stress, drugs, COVID-19, ableism, disability, social justice, stigma, bias, inclusion, gender, LGBTQA+, and many more.		✓	✓			



Connect Platform-Wide Updates

- **NEW!** Updated instructor experience provides a simplified dashboard, quicker and easier access to information you need with fewer clicks. Newly optimized for mobile usage and with accessibility enhancements, pages are now screen-reader compatible, key board navigable, and allow for up to 400% magnification.
- **NEW!** Co-instructor privileges are now available. Instructors can easily add instructors to any section.
- **NEW!** Writing Assignment has the option to assign a peer review, including the ability to set the number of peer reviews, automatic assigning after the draft due date, and anonymous peer commenting.
- **NEW!** Increased maximum points to 2,000 points for an individual question or assignment.
- **NEW!** Streamlined integration with your Learning Management System (LMS). The new LTI Advantage integration allows for easier section pairing, automatic account creation for new users, improved visibility into grade sync features, automatic relinking, and better security.
- **NEW!** Polling Tool is now available as a resource in Connect.
- More mobility. Free download the ReadAnywhere® App and Connect tablet app allows students full access to their Connect course to complete assignments, read their eBook, and check grades—just like they would on a laptop browser.
- Accessibility enhancements ensure new content and technology follows the WCAG version 2.1 AA guidelines and best practices. Some examples of enhancements include a compliant click-and-drag question type in the Question Bank, alt descriptions added to eBook for screen reader users, increased accessibility to presentation PowerPoints, and read-aloud functionality in SmartBook 2.0. For further information regarding McGraw Hill accessibility, please contact us at accessibility@mheducation.com.
- World-class reliability with 99.9% platform uptime.
- Option for students to purchase a loose-leaf version of the text at a significant discount with free shipping.
- Partnership with the Online Learning Consortium (OLC) provides an even higher level of expertise and support when transitioning your course.



Chapter-by-Chapter Changes

Chapter 1: Introduction

- Coverage of the very recent decline of approximately 1.5 years in U.S. life expectancy in 2020, with a 2.9-year drop for Black Americans and a 3-year decline for Latinos because of the staggering number of deaths during the COVID-19 pandemic (Centers for Disease Control and Prevention, 2021)
- Inclusion of new content on how the COVID-19 pandemic has disproportionately harmed older adults, making them more vulnerable to contracting a severe or deadly version of the disease as well as uprooting their lives by isolating them from family and friends (Kim & others, 2022; Panagiotou & others, 2021)
- Updated data on the increasing percentage of ethnic minority children in the United States, which in 2020 reached 52.3 percent (U.S. Census Bureau, 2020)
- New content how in 2020, the deadly effects of racial discrimination took center stage in the United States as not only Black Americans but members of other groups protested the killing of Black Americans such as George Floyd by non-Latino White police officers
- Coverage of a recent review of research involving 3- to 19-year-old U.S. children and adolescents that concluded those living in lower socioeconomic settings were more likely to have higher levels of psychopathology (Pevevill & others, 2021)
- Revised definition of gender, which is now described as a mosaic of categories related to femininity and masculinity based on social and cultural norms
- Updated U.S. poverty rates indicating that in 2019, 14.1 percent of U.S. children under 18 years of age were living in families with incomes below the poverty line (U.S. Census Bureau, 2020)
- Updated statistics on ethnic minority poverty rates in the United States (U.S. Census Bureau, 2020)
- Description of a recent research review of a psychological perspective on intergenerational economic mobility, in which it was concluded that the mastery of three developmental tasks for each generation—academic/ language skills, self-regulation/mental health, and parentchild relationships—will produce better educational outcomes for both parent and child generations (Sabol & others, 2021)
- New content on what has been labeled “the paradox of aging” because older adults are as happy or happier than younger adults even though their physical health and function are often declining (Li, Lai, & Chappell, 2022)
- Coverage of a recent study that found that at 65 years of age individuals’ happy life expectancy was 25 percent more than their cognitive impairment life expectancy and at age 85 their happy life expectancy doubled to 50 percent greater than their cognitive impairment life expectancy (Bardo & Lynch, 2021)
- Description of recent research indicating that an adult’s biological age was a good predictor of whether they would have a stroke recurrence (Soriano-Tarraga & others, 2021)
- Coverage of recent research that found psychological wellbeing, as indexed by having a higher purpose in life, positive affect, optimism, social support, and life satisfaction, predicted a lower mortality risk (Boylan, Tompkins, & Krueger, 2022)
- Recent analysis using a number of environmental systems in Bronfenbrenner’s theory to better understand Black American/ non-Latino White disparities in maternal and child health (Noursi, Saluja, & Richey, 2021)
- Expanded and updated coverage of sophisticated eye-tracking equipment that is also being used in research on face processing (Johnels & others, 2022), cognitive processing in bilingual children (Enke & others, 2022), language acquisition (Siegelman & others, 2022), and emotional development (Hunnikin & others, 2022)
- Updated Connecting with Careers feature on Pamela Trotman Reid, including a \$1 million endowment for psychology students/faculty at Howard University established by Reid and her husband

Chapter 2: Biological Beginnings

- Updated content on how a team of 99 scientists finished the genetic coding of the human genome in 2019 and concluded that it contains 19,969 protein-coding genes (Zimmer, 2021)
- Recent research documenting factors that can influence gene expression, including stress (Parel & Pena, 2022), exercise (Anderson, 2022), nutrition (Bordoni & others, 2022), obesity (Tur & Martinez, 2022), cancer (Hassanzadeh & others 2022), cardiovascular disease (Constantino & Paneni, 2022)), radiation (Sallam & others, 2022), smoking (Kim & others, 2022) and sleep (Carroll & others, 2021)
- Inclusion of recent research indicating that methylation is likely to be involved in hypertension (Chaudhary, 2022), depression (Paoli & others, 2022), cancer (Kresovich & others, 2022), obesity (Mahmoud, 2022), inflammation (Onodera & others, 2022), addictive drugs (Browne & others, 2022), attention deficit hyperactivity disorder (Muller & others, 2022), autism, (Mouat & Lasalle, 2022), and neurodevelopmental disorders (Kaur & others, 2022)
- Updated and new content on the role of susceptibility genes in making people more vulnerable to diseases and disorders such as COVID-19 (Dastar & others, 2022), arthritis (Wu & others, 2022), colorectal cancer (Kim & Bodmer, 2022), cardiovascular disease (Ling & others, 2022), Alzheimer disease (Li & others, 2022) and Parkinson disease (Jiang & others, 2022), as well as the role of longevity genes in making people less vulnerable to certain diseases and more likely to live to an older age (Bin-Jumah & others, 2022)

Chapter 2 (continues)

- Updated and expanded research on the influence of gene-gene interaction in immune system functioning (Shan & others, 2022), obesity (Maculewicz & others, 2022), type 2 diabetes (Molina-Ayala & others, 2022), cancer (Niu & others, 2022), cardiovascular disease (Walsh & others, 2022), arthritis (Xiao, Xiao, & Zhan, 2022), and Alzheimer disease (Wang, Chen, & Shao, 2022)
- Inclusion of a recent analysis that indicated during infancy and childhood, boys with XXY syndrome have expressive and receptive language deficiencies (Samango-Sprouse & others, 2021)
- New content on sickle-cell anemia, including the number of children born worldwide with this disorder and how stem cell transplantation is being explored in the treatment of infants with sickle-cell anemia (Ashorobi & Bhatt, 2022)
- New data indicating that about 1 in 500 Black American babies and 1 in 36,000 Latino babies is affected by sickle-cell anemia (Borhade & Kondamudi, 2021). One in 10 Black Americans and 1 in 20 Latinos are carriers.
- New note indicating that in June 2022, changes in U.S. abortion laws made abortion illegal in some states at various stages of pregnancy
- New critical thinking questions about prenatal identification
- Updated statistics indicating that approximately 10 to 15 percent of couples in the United States and 8 to 12 percent globally experience infertility (Agarwal & others, 2021)
- New summary statement pointing out that the cause of infertility can rest with the woman or the man and can involve genetic and/or environmental influences (Coskun & others, 2022; Niederberger, 2022)
- New analysis indicating that concern has surfaced that the COVID-19 viral infection can attack sperm and might lead to infertility (Aitken, 2021), although this has not been firmly established (Tian & Zhou, 2021)
- Discussion of recent research in which children adopted internationally often have experienced adverse experiences prior to adoption, placing them at risk for problematic socioemotional development (Yarber & others, 2021)
- Description of recent research involving a secure attachment intervention program that improved the socioemotional competence of internationally adopted 3- to 6-year-olds (Lind & others, 2021)
- Coverage of a recent study indicating that 3 years after being adopted from residential care, children showed fewer attachment disorder problems than their counterparts who remained in residential care (Roman, Palacios, & Minnis, 2021)
- Description of a recent United Kingdom study of mainly non-Latino White, well-educated gay father, lesbian mother, and heterosexual families and their adopted young adolescents that found no differences in parent-adolescent relationships and adolescent behavior between the different types of families (McConnachie & others, 2021)
- New note indicating that it's too soon to know whether recent changes in abortion legislation will affect adoption trends
- New Connecting Through Research feature, "Outcomes of Children Who Are Adopted in Gay, Lesbian, and Heterosexual Families," describing how research revealed no differences in children and family functioning in these different family structures but rather some process differences in parenting stress and early childhood adjustment (Farr, 2017)
- In closing the coverage of adoption, students are asked to think about what they would do if they were unable to have children but wanted to become parents. Students also are asked to reflect on whether they would want to adopt children or would try in vitro fertilization first.
- Coverage of a recent research review concluding that variations in the 5-HTTLPR gene may contribute to the tendency to ruminate when individuals face life stress (Scaini & others, 2021)
- Discussion of three recent studies indicating that the short version of the 5-HTTLPR gene is linked to greater risk of depression in individuals with coronary heart disease (Zhang & others, 2020), stroke (Wang & others, 2020), and Parkinson disease (Cheng & others, 2020)

Chapter 3: Prenatal Development and Birth

- Discussion of a large-scale study in China in which pregnant women who took folic acid daily significantly reduced the incidence of spina bifida in their offspring (Zhou & others, 2022)
- Inclusion of a recent study revealing that deficient folic acid in mothers during pregnancy was linked to smaller total brain development at 9 to 11 years of age (Zou & others, 2021)
- Coverage of a recent review of 17 meta-analyses that concluded maternal caffeine consumption during pregnancy was linked to a higher occurrence of miscarriage, stillbirth, low birth weight, and childhood acute leukemia (James, 2021)
- Description of a recent meta-analysis that found higher maternal caffeine intake during pregnancy was associated with childhood overweight and obesity (Jin & Qiao, 2021)
- Inclusion of recent research in which children with FASD had impairments in verbal comprehension, perceptual-motor coordination, processing speed, attention, executive function, and language development (Lange & others, 2021)

Chapter 3 (continues)

- Discussion of recent research that indicated 8- to 13-year-old children with FASD showed impairment in their visualcortical brain network that could lead to slower cognitive processing (Pervin & others, 2022)
- Description of a recent study linking grand-maternal smoking during pregnancy to ADHD in grandchildren independent of whether their mother smoked in pregnancy (Yim & others, 2022)
- Coverage of recent research in which maternal cigarette smoking during pregnancy was associated with lower academic achievement in offspring at 16 years of age (Kendler & others, 2021)
- Inclusion of a recent study that indicated maternal smoking during pregnancy was associated with depression and generalized anxiety disorder in offspring at 22 years of age (Correa & others, 2022)
- Description of a recent study revealing that maternal exposure to second-hand smoke during prenatal development was associated with ADHD in elementary school (Lin & others, 2021)
- Description of a recent research review indicating that cocaine exposure during prenatal development is associated with reduced birth weight, length, and head circumference (Cestonaro, Menozzi, & Terranova, 2022)
- Coverage of a recent analysis that indicates prenatal marijuana exposure is related to deficient cognitive skills in children (Shukla & Doshi, 2022)
- Discussion of recent research that found offspring of mothers who used marijuana during pregnancy were more likely to be born preterm or at low birth weight (Haight & others, 2021)
- Coverage of recent research indicating that maternal marijuana use during pregnancy is linked to a higher level of psychopathology (internalizing and externalizing problems) and a lower level of gray matter volume in the brain in offspring (Paul & others, 2021)
- Description of a recent study that found marijuana use by pregnant women increased from 6 percent to 11 percent in California following its legalization in that state (Lee & others, 2021)
- Discussion of a recent revealing that infants with prenatal oxycodone exposure were more likely to be preterm or stillborn (Brogly & others, 2021)
- Commentary that from January through March of 2021, syphilis rates increased by 34 percent in U.S. women compared with syphilis rates in 2020 (Centers for Disease Control and Prevention, 2022)
- Coverage of a recent research review concluding that maternal diabetes is associated with an increased risk of childhood cancer in offspring, especially leukemia (Yan & others, 2021)
- Description of a recent study in which higher maternal BMI in early pregnancy was associated with overweight and obesity in young adult offspring (Ounjaijean & others, 2021)
- Inclusion of recent research in which pregnancy after 35 years of age was associated with increased risk of diabetes, hypertension, and having a cesarean section (Montori & others, 2021). Also, in this research, pregnancy after age 40 was linked to a higher risk of fetal death, neonatal ICU admission, and postpartum hemorrhage.
- Description of a recent study comparing the health status of newborns whose mothers gave birth at advanced maternal age (35 to 44 years old), very advanced maternal age (more than 45 years old), and age 34 or younger (Smithson & others, 2022). Rates of neonatal intensive care unit admission, Apgar score of 5 days after cesarean delivery were higher for mothers age 45 or older. Birthweights of neonates also were significantly lower if their mothers were 45 or older.
- Discussion of a recent study that revealed a higher level of maternal stress in pregnancy was linked to lower newborn hippocampal volume in the brain and less competent infant socioemotional development across the first year of life (Moog & others, 2021)
- Coverage of recent research that found women who experienced domestic violence during pregnancy were 4.9 times and 5.3 times more likely to suffer from stress and depressive symptoms, respectively, than non-victims of domestic violence (Mahapatro & others, 2022)
- Inclusion of new content on increased risks experienced by pregnant women during the COVID-19 pandemic. During 50 days of quarantine, women showed a gradual increase in psychopathological indicators and a decrease in positive affect (Lopez-Morales & others, 2021), with pregnant women showing a more pronounced increase in depression, anxiety, and negative affect than non-pregnant women did.
- Description of a recent study of low-income, primarily Latina mothers in which maternal depression during pregnancy was linked to children's lower cognitive development, especially among girls, at 5 years of age (Urizar & Munoz, 2022)
- Discussion of a recent study revealing that infants' lower level of a biological index of self-regulation at 7 months postpartum was linked to a higher level of paternal stress in the third trimester of pregnancy (Gao & others, 2021)
- New study revealing that preconception paternal smoking was associated with preterm birth risk (Wang & others, 2022)
- Coverage of recent research that found mothers' perceived stress during pregnancy was elevated when the father was physically and verbally aggressive toward her (Kashanian & others, 2021), and her stress was lower when he was emotionally and financially supportive and when he participated in prenatal care visits

Chapter 3 (continues)

- New data comparing rates of prenatal care received by Black American mothers (68 percent) and non-Latina White mothers (83 percent) (Centers for Disease Control and Prevention, 2021)
- New Connecting with Careers profile featuring midwife Jennifer Nguyen, who works with diverse communities in Canada and strives to reduce inequities in health care in rural and remote areas
- Inclusion of a recent study in which Black American and Latina women reported almost twice as many barriers to prenatal care as non-Latina White women did (Fryer & others, 2021)
- Discussion of a recent research review indicating that women who used waterbirth perceived it to be a positive experience (Feeley, Cooper, & Burns, 2021)
- Description of recent data indicating that in 2018, the U.S. cesarean birth rate peaked at 31.9 percent of all birth and continued to remain high in 2020 at 31.8 percent of all births (Hamilton & others, 2021)
- Updated data showing that in 2020 in the United States, 98 percent of births took place in hospitals, 1.26 percent occurred in homes, and 0.74 percent happened in freestanding birth centers (MacDorman, Barnard-Mayers, & Declercq, 2022)
- New data indicating that the percentage of home births rose from 1.03 percent in 2019 to 1.26 percent in 2020 in the United States, an increase of 22 percent and the highest since 1990 (Gregory & others, 2022). In contrast, between 2018 and 2019, prior to the COVID-19 pandemic, there was no change in the percentage of home births. Also, from 2019 to 2020, home births increased from 1.55 to 1.87 percent for non-Latina White women, from 0.50 to 0.68 percent for Black American women, and from 0.37 percent to 0.48 percent for Latina women.
- New discussion of how doulas' close relationships with pregnant women enabled them to become an important source of support during the COVID-19 pandemic (Adams, 2022)
- Coverage of a recent comparison of more than 17,500 each of land births and waterbirths that revealed waterbirth resulted in improved or no difference in most outcome measures (Bovbjerg & others, 2022)
- Description of a recent study using the Neonatal Intensive Care Network Neurobehavioral Scale (NNS) which revealed that toxic metals measured in placental tissue may adversely affect newborn neurobehavior (Tung & others, 2022)
- Inclusion of recent data indicating that in 2020, 10.1 percent of U.S. infants were born preterm—up from 8 percent in 2007 (Hamilton & others, 2021). The preterm birth rate was 9.1 percent for non-Latina White infants (down from 11.4 percent in 2011); 14.3 percent for Black American infants (down from 16.7 percent in 2011); and 9.8 percent for Latino infants, down from 11.6 percent in 2011.
- Updated statistics on the incidence of low birth weight in the United States, which was 8.3 percent in 2019, a rate that is considerably higher than that of many other developed countries (Martin, Hamilton, & Osterman, 2021)
- Discussion of a recent study that indicated poverty factors were a likely reason for Black American and non-Latina White disparities in low birth weight outcomes (Loggins Clay, Woodson, & Kersh, 2021) New coverage of a recent Japanese study of very low birth weight infants (VLBW) that found 6.2 percent were born with birth defects, with the most common being chromosomal abnormalities, heart defects, and malformation of the digestive system (Kawasaki & others, 2020)
- Inclusion of a recent study that found only 50 percent of extremely low birth weight and preterm infants weighing less than 1.1 pounds at birth survived after admission to intensive care, while 46 percent had moderate to severe disabilities at 5 years of age (Athaly-Jape & others, 2022)
- Description of a recent research review of preterm and low birth weight infants that found those who received maternal kangaroo care for 2 to 6 hours a day gained more weight than those who did not get the care (Charpak, Montealegre-Pomar, & Bohorquez, 2021). However, the weight gain effect disappeared when infants received only 2 hours or less of this care per day.
- Coverage of a longitudinal study in which kangaroo care compared to standard incubator care of preterm infants led to an improved neuroprotective effect (higher volume in different brain regions and better organized white matter) when they were 20 years old (Charpak & others, 2022)
- Coverage of a recent study that found most parents sing to their infants and toddlers on a daily basis (Yan & others, 2021)
- New Connecting with Careers profile on Laura Faith Kendall, a music therapist who works with parents and newborns as well as individuals of all ages
- Inclusion of recent research with preterm infants that found those who received massage therapy had a significantly higher daily weight gain and an increase in bone mineral density (Elmoneim & others, 2021)
- Coverage of recent research showing that in the postpartum period, women who engage in light-to-moderate physical activity are less likely to experience poor sleep quality (Matenchuk & Davenport, 2021)
- Discussion of a recent study that analyzed videotaped behavioral interaction data and found that mothers with postpartum depression were prone to inactive maternal behavior, more frequent rejection of their infants, and disengagement of affection towards the infant (Mavrogiogou & others, 2022)

Chapter 4: Physical Development in Infancy

- Updates on recent research by Charles Nelson (a leading expert on infant brain development) and his colleagues, who are exploring topics such as the impact of exposure to early adversities (Bach & others, 2022), autism (Lawrence & others, 2022), face recognition and facial emotion (Bowman & others, 2022), and inhibitory control (Sullivan & others, 2022)
- Description of recent MRI research documenting the role of both the left and right hemispheres in language development in 18- to 27-month-olds (Bosseler & others, 2021) and indicating that the right frontal cortex plays an important role in left-lateralized word learning
- Coverage of MRI research demonstrating that both the right and left hemispheres are involved in the control and processing of emotions (Bajaj & Killgore, 2021)
- Revisions in the discussion of the development of the brain during infancy based on comments by leading experts Charles Nelson and Martha Ann Bell
- Coverage of recent research in which adolescents with a history of institutional care were less likely to be consistently competent than those who were family reared (Guyon-Harris & others, 2021). Among those who were exposed to early institutional rearing, competent functioning from 8 to 16 years was linked to spending less time in institutions and receiving higher-quality caregiving early in life.
- Description of a recent study that found one night of total sleep deprivation impairs molecular clearance of waste from the brain and that sleep on the next several days does not compensate for the lost sleep (Eide & others, 2021)
- Discussion of a recent study that revealed sleep-specific brain activity restores performance by actively refining brain plasticity (Nissen & others, 2021)
- Inclusion of information on the discovery of two recent gene mutations linking SIDS to the occurrence of heart arrhythmias: a cardiac sodium gene (SCN5A) and a cardiac potassium gene (KCNQ1) (Rivaud & Boukens, 2022)
- Updated data indicating that an increasing percentage of U.S. mothers are breastfeeding their infants (Centers for Disease Control and Prevention, 2020)
- Inclusion of a recent research review of 42 studies that concluded breast feeding was associated with a lower risk of being overweight at 2 years of age and older, especially if breast feeding continues for 6 months or longer (Dewey & others, 2021)
- New research indicating why Black American mothers tend to have lower rates of breast feeding (Jones & others, 2015)
- Description of a recent research review that was inconclusive as to whether breast feeding reduced cancer in women (Carbrero & Tapero, 2022)

- Discussion of a recent study that discovered longer participation (3 years versus 1 year) in a WIC Special Supplemental Nutrition Program supported children's healthy eating habits (Borger & others, 2022)
- Coverage of a recent analysis that indicated Black immigrant first-time mothers enrolled in the WIC Special Supplemental Nutrition Program had a significantly higher breast-feeding initiation rate than did their Black American counterparts (Roess & others, 2022)
- New content indicating that the emergence of COVID-19 in the United States led most states to close or extensively limit their early child-care and education programs (Bauer & others, 2021), affecting many of the 4.6 million low-income young children who receive free meals and snacks through these programs each day
- Inclusion of recent research indicating that fine motor skills at 12 months of age are positively related to communication skills at 2 years of age (Valla & others, 2020)
- Update on the many areas of infant perception in which eyetracking equipment is being used, including attention (Aktor & others, 2022), face processing (Johnels & others, 2022), cognitive processing in bilingual children (Enke & others, 2022), language acquisition (Siegelman & others, 2022), emotional development (Hunnikin & others, 2022), understanding of others' needs (Koster & others, 2019), and the development of atypical infants such as those with autism (Bagherzadeh-Azbari & others, 2022) and preterm infants (Dean & others, 2021)
- Coverage of a recent study with infants in a NICU that found that gentle human touch during a painful procedure reduced the newborns' pain (Fatollahzade & others, 2022)

Chapter 5: Cognitive Development in Infancy

- Inclusion of a recent study that found infants' attention at 4 months was linked to their working memory at 14 months (Li & others, 2022)
- New content indicating that joint attention especially improves between 9 and 12 months of age (Boyer, Harding, & Bertenthal, 2020)
- Description of a recent study in which joint attention was a key factor linking positive parenting with executive function of infants in low-income families (Brandes-Aitken & others, 2020)
- Discussion of recent research indicating that joint attention is likely to develop more effectively in higher-than in lower socioeconomic-status (SES) families, possibly because infants in higher-SES families experience more cognitive stimulation, more books, less household chaos, and less stress (Reilly & others, 2021)
- Coverage of recent research indicating that deficits in initiating joint attention at 8 months and responding to joint attention at 12 months were linked to increased risk of autism spectrum disorder at 18 months of age (Montagut-Asuncion & others, 2022)

Chapter 5 (continues)

- Revised and updated content on language development based on feedback from leading expert Virginia Marchman
- Discussion of a recent study in which infants who experienced more gesturing from their parents at age 12 months had a better vocabulary at 36 months (Choi & others, 2021)
- Description of a recent study of 14-month-old infants in which girls produced more types of gestures than boys did (Germain & others, 2022)
- Coverage of a recent study that revealed early pointers (first pointing at 9 months of age) had higher word comprehension at 18 months of age than typical pointers (first pointing at 12 months of age) (Perucchini & others, 2022)
- Inclusion of a recent German study that found 6-month-old infants' vocalizations predicted their expressive vocabulary but not their receptive vocabulary at 12 months of age (Werwach & others, 2021)
- New discussion on how some children experience a vocabulary spurt while others take more of a slow-and-steady course in learning new words
- New content on the variability of when infants and toddlers learn new words as well as when they experience vocabulary spurts (Serrat-Sellabona & others, 2021)
- Description of a recent German study that revealed the mother's cognitive-verbally stimulating parenting behavior at 26 months of age was related to the children's language skills at 38 months of age (Huang & others, 2022)
- Inclusion of recent research in which 15-month-old infants whose mothers had a college education had much better language skills than their counterparts whose mothers did not have a college education, and these differences were still present at 3 years of age (Justice & others, 2020)
- New Connecting Through Research feature indicating that early parental communication quality supported the language and literacy success of children from Mexican-American families in low-income environments and that culturally specific dimensions of early parent-child engagement can align with general positive features of joint engagement (Adamson & others, 2021)
- Coverage of a recent research review that concluded child-directed speech occurs less in low SES-families than middleand high-SES families (Daily & Bergelson, 2022)
- Description of a recent study of 9-to 18-month-old infants in which book sharing resulted in more parent talk, child talk, and interactions than other reading activities (during toy play, personal care, and mealtime, for example) (Clemens & Kegel, 2021)

- Discussion of a recent study of 9- to 15- and 30-month-olds in which parents' language was more frequent, rich, and complex during shared storybook reading than during shared television viewing (Hanson & others, 2021)
- Coverage of recent research in which introducing a mobile app emphasizing shared reading as opposed to screen time to primarily Latino and low-income parents during well-visits to their 6- and 18-month-olds resulted in more frequent shared book reading at 12 months and higher language development scores at 24 months (Hutton & others, 2021)

Chapter 6: Socioemotional Development in Infancy

- New content on the fact that when greater numbers of parents began working at home during the COVID-19 pandemic, fathers probably spent more time interacting with their children than in previous decades
- Coverage of a recent research review which concluded that interventions to increase father involvement, especially in terms of skin-to-skin or tactile stimulation, with their preterm infants in the NICU has positive outcomes for infants' physiological and behavioral outcomes as well as fathers' mental health (Filippa & others, 2021)
- Description of a recent study in which a digital recording device was used to assess daily newborn crying time duration (Cabana & others, 2021). In this study of healthy, full-term newborns, the mean crying time was about 25 minutes per day during the first week, then remained stable for several weeks, followed by an increase to almost 40 minutes per day at five weeks. Prior research on infant crying time was mainly based on parental reporting and suggested that infants cried less than this study indicated.
- Discussion of a recent study that found when parents "let their infants cry it out" in the first six months, this practice was not associated with adverse behavioral development and attachment at 18 months (Bilgin & Wolke, 2020)
- Inclusion of a recent study in which infants who were left to "cry it out" showed highly problematic behavior at 3 months of age but lower rates of problematic behavior at 12 months (Giesbrecht & others, 2020)
- Coverage of a longitudinal study revealing that having a difficult temperament at 2 years of age was linked to susceptibility to psychopathology in adolescence and to depressive symptoms and lower well-being in early adulthood (Wu & others, 2022)
- Discussion of a recent study in which adolescents with higher levels of effortful control were less likely to engage in suicidal ideation, plans, and attempts (Lawson & others, 2022)
- Coverage of recent research indicating that the internal model of attachment plays a pivotal role in the discovery of links between attachment and joint attention (Naghashan & others, 2021)

Chapter 6 (continues)

- Description of a recent study that indicated Latino infants were at higher risk for obesity if they showed avoidant or anxious insecure attachment behavior than if they showed secure attachment (Hepworth & others, 2021)
- Discussion of a longitudinal study in which infant attachment insecurity was linked to less effective emotion-regulation strategies in relationship-challenging contexts 20 to 35 years later (Girme & others, 2021)
- Coverage of a longitudinal study that revealed infants characterized as insecure disorganized at 18 months had brain abnormalities and experienced peer rejection later in childhood (Leblanc & others, 2022)
- New Connecting Through Research feature on the importance of developmental cascades research, including a longitudinal study that revealed mother-infant attachment was linked to children's school readiness via executive function and prosocial behavior in the preschool period (Bernier, Beauchamp, & Cimon-Paquet, 2021)
- Coverage of a recent research review concluding that DNA methylation associated with infant attachment may influence the stress regulation system and socioemotional function (Craig & others, 2021)
- Description of a longitudinal study that found a successful transition to motherhood was linked to offspring having better emotion regulation in early childhood and higher life satisfaction in early adolescence (Richter, Bondu, & Trommsdorff, 2022)
- Discussion of recent research indicating that experiencing greater paternal sensitivity at 8 months was linked to lower rates of externalizing problems in the elementary school years (Jacobvitz & others, 2022)
- Inclusion of very recent data from the U.S. Census Bureau's Household Pulse Survey collected in April and May of 2021 revealing that approximately 6.5 million families with children had experienced child care disruptions in the four weeks preceding the survey because of the COVID-19 pandemic (U.S. Census Bureau, 2021), with the most frequent outcome being an adult staying in the household and supervising children while working. Black American and Latino families were the most likely to report that an adult in the household had to take unpaid leave (29.4 percent and 32.9 percent, respectively), while non-Latino White and Asian American families were most likely to report supervising children while working (33.3 percent and 34.7 percent, respectively)

Chapter 7: Physical and Cognitive Development in Early Childhood

- New study of almost 4,000 children in which low family income was linked to children's lower brain volume and cortical thickness (Tomasi & Volkow, 2021)
- Description of a recent study that revealed children from low-SES families had lower prefrontal cortical volume (Dennis, Manza, & Volkow, 2022)
- Inclusion of a recent research review of 3-to 5-year-olds that concluded a higher level of physical activity was associated with better motor development (Veldman & others, 2021)
- Description of a recent study that found pairing preschool children with older adults to engage in exercise together resulted in improved gross motor skills for both the children and the older adults (Minghetti & others, 2021)
- Inclusion of a recent study revealing that child maltreatment was associated with children's insomnia, nightmares, and shorter sleep duration (Schonning & others, 2022)
- Discussion of recent research that indicated excessive screen time was linked to later sleep onset and shorter sleep duration in preschool children (Hiltunin & others, 2021)
- Coverage of a recent study that revealed having nightmares at 24 months and restless sleep at 48 months were linked to ADHD at 11 years of age (Carpena & others, 2020)
- Update describing significantly increased rates of overweight and obesity for children and adolescents during the COVID-19 pandemic, with 22 percent of 2- to 19-year-olds classified as overweight in 2021, up from 19 percent in 2020 (Centers for Disease Control and Prevention, 2021)
- Inclusion of a recent study of low-income Latina mothers and their children that revealed the children had a higher future obesity risk when their mothers ignored the children's fullness cues and pressured them to eat (Power, & others, 2021)
- Description of a recent study in which the 5-2-1-0 program was effective in reducing children's body mass index (BMI), increasing their daily consumption of fruits and vegetables, reducing screen time, increasing their daily physical activity, and reducing their daily consumption of sugary beverages (Le Jenkins & others, 2020)
- Discussion of a recent study in which more than one hour of screen time at 2 years of age was linked to an increased risk of obesity at 4.5 years of age (Malihi & others, 2021)
- New content indicating that the emergence of COVID-19 in the United States led most states to close or extensively limit their early child-care and education programs (Bauer & others, 2021), affecting many of the 4.6 million low-income young children who receive free meals and snacks from these programs each day

Chapter 7 (continues)

- Updated data indicating that in 2018 in the United States, the leading causes of death in infants were congenital malformations, low birth weight, maternal complications, SIDS, and accidental (unintentional) injuries (Centers for Disease Control and Prevention, 2021)
- New content noting that the infant mortality rate of Black American infants was 2.3 times the rate of non-Latino White infants (Centers for Disease Control and Prevention, 2021).
- New data indicating that in 2019, the leading causes of death in children 1 to 4 years of age were accidents, congenital malformations, deformations and chromosomal abnormalities, and cancer (National Vital Statistics System, 2021)
- Discussion of recent research that indicated environmental smoking exposure in the home was associated with tuberculosis in children (Altet & others, 2022)
- Inclusion of a recent study that found cumulative exposure to tobacco smoke was linked to children's increased risk for hospital admissions (Merianos & others, 2022)
- Coverage of a recent study of young children in which family members smoking inside the housing unit was associated with receptive and expressive language difficulties in male children (Jackson & Testa, 2021)
- New Connecting Through Research feature on how low-income preschool-aged children's ability to selectively focus and sustain their attention served as a strong predictor of early math reasoning and early literacy skills in both fall and spring assessments (Shannon, Scerif, & Raver, 2021)
- Description of a study that indicated autonomy-supportive parenting, especially giving children choices, was associated with better executive function in early childhood (Castelo & others, 2022)
- Inclusion of a recent study that found positive sleep development in preschool predicted better executive function in elementary school (Bernier, Cimon-Paquet, & Tetresault, 2021)
- Discussion of a recent cross-cultural study in which executive function levels of children in Hong Kong and mainland China were higher than those of children in Great Britain (Xu & others, 2020)
- Description of a recent study in which fast mapping was documented as early as 24 months of age in remembering novel object names after a single learning event (Remon & others, 2020)
- Inclusion of a recent comparison of 38 developed countries by the OECD (2021) that found participation of U.S. 3- to 5-year-olds in early childhood education was below the average of the 38 countries
- Updated data indicating that there were 5,000 Montessori schools in the United States in 2021 and approximately 20,000 worldwide in 2016 (National Center for Montessori in the Public Sector, 2021)
- New content in which an expert on young children's development and education, Angeline Lillard (2021), argued that Montessori is a very positive alternative to other early childhood programs and is especially effective in resolving the dichotomy between work and play
- Inclusion of updated data indicating that for a number of years, Head Start served approximately 1 million children 5 years of age and younger per year, although that number dropped to 755,000 in 2021 because of the COVID-19 pandemic (KIDS COUNT, 2022)
- New Connecting with Careers feature on Rakaya Humphreys, Director of Head Start for the Northwest Tennessee Economic Development Council, who also benefitted from Head Start services as a young mother. Updated data indicating that in 2020, 44 states had some form of public-funded preschools (Friedman-Krauss & others, 2021), but only four states (New Jersey, North Carolina, Oklahoma, and West Virginia) were spending enough to pay for high-quality full-day preschools
- New content indicating that due to issues such as health risks, closed classrooms, and remote pre-K, the 2020–21 school year—the first to be fully affected by the COVID-19 pandemic—saw nearly 300,000 fewer children enrolled in state-funded preschool programs, representing the first decline in enrollment in 20 years

Chapter 8: Socioemotional Development in Early Childhood

- Description of a recent study revealing that preschool children who attended childcare displayed more anger and aggression than those who did not (Salemi & Caprin, 2022)
- Coverage of a recent study of young children in which a lower level of maternal depression and a higher level of children's executive control predicted a higher level of children's emotion knowledge (Thompson & others, 2020). Discussion of a recent study that indicated children's emotion regulation (their ability to manage feelings of sadness and worry) served as a buffer against internalizing symptoms associated with peer victimization (Cooley & others, 2022)
- New Connecting Through Research feature revealing that the intervention training program "Tune in to Kids" increased the mothers' use of emotion coaching and decreased their emotion dismissing with their young children (Qiu & Shum, 2021), providing the first evidence of the effectiveness of an emotion-coaching program in a non-Western culture (China)
- New summary of a number of supportive and unsupportive caregiver emotion socialization strategies with young children based on research across the last two decades (Spinrad, Morris, & Luthar, 2020)

Chapter 8 (continues)

- Updated definitions of gender, gender roles, and gender-typing
- Description of a recent Chinese study revealing that authoritative parenting increased children's favorable trajectories of math achievement (Wang, Chen, & Gong, 2021)
- Coverage of recent research indicating that authoritative parenting was linked to reducing adolescent screen time (Xu, 2021)
- Inclusion of a recent study of 7- to 9-year-olds in which indulgent parenting was associated with increased body mass index (BMI) (Hughes & others, 2021)
- Updated data indicating that physical punishment was outlawed in 59 countries in 2020 (up from 34 in 2012), with a number of countries increasing the ban on physical punishment mainly to promote children's rights to protection from abuse and exploitation (Global Initiative to End All Corporal Punishment of Children, 2020)
- New main section "COVID-19 Effects on Parenting and Nurturing Children"
- Updated data indicating that in 2019, approximately 656,000 U.S. children were victims of child abuse at least once during that year (Administration on Children and Families, 2021)
- Coverage of a recent study indicating that young children who were physically abused during their first five years of life were more likely to later receive special education services, repeat a grade in school, have been convicted of a crime in the past year, and have worse physical health compared with young children who were not physically abused during their first five years of life (Lansford & others, 2021)
- Inclusion of a recent research review concluding that childhood sexual abuse is linked to an increased incidence of mental health disorders (including posttraumatic stress disorder, mood and anxiety disorders) as well as substance use disorders (Noll, 2021)
- Discussion of a recent study that revealed mothers who had experienced child maltreatment from their parents were more likely to engage in maltreatment of their offspring, which in turn predicted greater internalizing and externalizing symptoms in middle and late childhood (Rusotti & others, 2021) Coverage of a longitudinal study tracking individuals from 2 to 24 years of age that found child maltreatment disrupted emotional development and resulted in difficulties identifying emotions and coping with emotional distress (Warmington & others, 2022)
- New Connecting with Careers profile featuring Allison Tomlinson, a college professor and marriage and family therapist who specializes in providing trauma therapy intervention to children in non-traditional family compositions, such as foster care and adoption
- Description of a Pew Research Center study (2019) of 130 countries and territories that indicated the United States has the world's highest percentage of children living in single-parent households.
- Coverage of a recent study in which adolescents' emotional and behavioral problems increased after their parents divorced, not before (Tullius & others, 2021)
- Discussion of a 15-year follow-up longitudinal study in which divorced families were given a parenting improvement program that resulted in reducing externalizing problems and improving academic outcomes (Wolchik & others, 2021)
- Inclusion of a recent study that revealed the quality of family relationships was the most important factor in predicting child well-being in sole and joint custody families (Steinbach & Augustijn, 2022)
- Coverage of a recent analysis that concluded in order to encourage child protection and better child custody decision-making, three key attachment principles should be considered: (1) the child's need for familiar, non-abusive caregivers; (2) the value of continuity in good-enough care; and (3) the benefits of networks of positive attachment relationships (Forslund & others, 2022)
- Updated data that revealed in 2019, 16.1 percent of same-gender couples had children in their household, with 24 percent of these being female-female couples and 7.2 percent male-male couples (Statista, 2021)
- Updated data that indicated in 2020, 50 percent of children 18 years of age and younger were non-Latino White; by 2050, this figure is projected to decrease to 39 percent, while 31 percent will be Latino, 14 percent will be Black American, and 7 percent will be Asian American (Childstats.gov, 2021) Coverage of a recent review of research involving 3- to 19-year-old U.S. children and adolescents that concluded those living in lower socioeconomic settings were more likely to have higher levels of psychopathology (Peverill & others, 2021)
- New content on how some children with low-SES backgrounds are competent and perform well in school; some children also perform better than many middle-SES and high-SES students
- Coverage of a recent study of children 4.8 years old that revealed higher peer competence benefited their academic performance (Wagner & others, 2021)
- Inclusion of a study that found in both the United States and China, parents' peer restriction predicted a decrease in children's adjustment over time (Xiong & others, 2020)
- Coverage of a recent study in which preschool children who engaged in excessive screen time had more problems involving conduct and peer relations (Tezöl & others, 2022)
- Description of a recent study of Japanese elementary school students that revealed longer screen time duration was linked with increased obesity, decreased physical activity, and lower academic performance (Mineshita & others, 2021)

Chapter 8 (continues)

- Discussion of a recent Dutch study that indicated children were less physically active and screen time was much higher during and after school closures due to the COVID-19 pandemic lockdown (Ten Velde & others, 2021)

Chapter 9: Physical and Cognitive Development in Middle and Late Childhood

- Coverage of a recent study in which children who engaged in regular exercise had lower rates of internalizing and externalizing problems (Tandon & others, 2021)
- Inclusion of a recent research review of 27 studies that concluded aerobic exercise is associated with children's reduction of body fat, lower fasting insulin, decreased inflammatory markers, and increased physical fitness (Lee, 2021)
- Description of a recent research review that concluded physical activity interventions improve the cognitive performance (especially executive function) of overweight or obese children (Sun & others, 2021)
- Discussion of a recent study of 10- to 11-year-olds in which a school-based physical activity intervention increased the children's self-reported psychological well-being and relations with peers (Kvalo & Natlandsmyr, 2021)
- Coverage of a recent study of fourth-graders in which cardiorespiratory fitness not only was linked to improved attentional skills, including concentration, but also to psychological well-being (Chen & others, 2022)
- New main section on "Health Disparities in Children Living in Poverty and Children of Color" (Dembo & others, 2022)
- Inclusion of recent data on the higher incidence of health problems in various ethnic minority groups (Tsenoli & others, 2022)
- New Connecting with Careers profile on Ariana Lorenzo, a Child Life Specialist
- Description of recent data indicating that in 2017–2020, 26.2 percent of Latino children, 24.8 percent of Black American children, 12.1 percent of non-Latino White children, and 9 percent of Asian American children were obese (Stierman, Afful, & Carroll, 2021)
- Coverage of how the COVID-19 pandemic has disproportionately affected children living in poverty conditions and children of color, as well as children who are vulnerable due to their living situations or underlying health conditions (Ang & others, 2022)
- Description of a recent study of 5- to 17-year-olds in southern California in which the greatest increase in being overweight during the COVID-19 pandemic occurred in 5- to 11-year-old children (Woolford & others, 2021)
- Inclusion of a recent large-scale Chinese study that revealed obese children were more than twice as likely to have hypertension than normal-weight children (Chen & others, 2021)
- Discussion of a recent intervention with 2- to 19-year-olds in the Supplemental Nutrition Assistance Program (a program for children who are at higher risk of poor diet) that revealed restricting purchases of sugar-sweetened beverages promoted a healthier diet and reduced their obesity risk (Choi, Wright, & Bleich, 2021)
- Coverage of a recent study that revealed children (mean age of 10 years old) with elevated blood pressure had a number of obesity-related characteristics such as high BMI and fat mass (Abu Ejheisheh & others, 2021)
- Updated data on the percentage of students with different disabilities who participated in special education in 2019–2020 (National Center for Health Statistics, 2021)
- Inclusion of a recent research review indicating that ADHD in many adolescents persisted into adulthood (mean rate of 43 percent) and was often associated with substance misuse and antisocial behavior (Di Lorenzo & others, 2021)
- Coverage of a recent study that revealed physical exercise can reduce children's ADHD symptoms by improving their attention, executive function, and motor skills (Sun & others, 2022)
- Description of a 2018 survey in which the estimated proportion of children with autism spectrum disorders had increased to 1 in 44 (Centers for Disease Control and Prevention, 2021)
- Discussion of a recent survey in which autism spectrum disorders were identified three times more often in boys than in girls (Centers for Disease Control and Prevention, 2021)
- Inclusion of a recent study of 7- to 8-year-olds that found having better working memory increased new word learning (Gray & others, 2022)
- Description of a recent German study in which superior metacognition increased the development of school achievement in gifted sixth- to eighth-grade students over and above intelligence (Tibken & others, 2022)
- New Connecting Through Research feature describing a recent longitudinal study that found metacognitive knowledge predicted the reading and writing performance of children from the first to sixth grades (Teng & Zhang, 2021)
- Coverage of a recent analysis across a number of countries in which bilingual children consistently demonstrated better executive function than monolingual children (Schirmbeck, Rao, & Maehler, 2020)

Chapter 9 (continues)

- Inclusion of a recent study conducted by Virginia Marchman and her colleagues (2020) in which stronger Spanish language skills at 2 years of age were linked to better English language skills as well as maintenance of good language skills at 4½ years of age, indicating that families who primarily speak Spanish should engage in activities that develop children's competence in Spanish while also encouraging opportunities to learn English

Chapter 10: Socioemotional Development in Middle and Late Childhood

- Coverage of recent research that confirmed perspective taking underlies children's prosocial actions and that their spontaneous capacity to take others' perspectives develops in the early elementary school years (Sobel & Blankenship, 2021)
- Inclusion of recent research indicating that children and adolescents who do not have good perspective-taking skills are reluctant to give to others (van de Groep, Zanolie, & Crone, 2020)
- New discussion of how low self-esteem has been implicated in overweight and obesity (Gong & others, 2022), anxiety and depression (Sahlan & others, 2021), suicide (Reid-Russell & others, 2021), and delinquency (Gauthier-Duchesne, Hebert, & Blais, 2021)
- Description of a recent research review that concluded there is good research evidence that high self-esteem has adaptive consequences for social relationships, school, work, mental health, physical health, and antisocial behavior (Orth & Robins, 2022) Coverage of a longitudinal study that found a reciprocal relation between self-esteem and achievement in Mexican-origin youth (Zheng & others, 2020)
- Discussion of a recent study of 4-year-olds in which better self-regulation predicted their math and literacy pre-academic skills (Konucu & others, 2022)
- Description of a longitudinal study that recently discovered that children with better self-control were more likely to graduate from high school on time and attend college (Johnston & others, 2022)
- Coverage of a recent study that revealed children with better self-regulation were less likely to have internalizing and externalizing problems (Lawler & others, 2022)
- Description of a longitudinal study tracking individuals from birth to 45 years of age that found those who had better self-control in childhood experienced slower bodily aging in adulthood and fewer signs of aging in their brains (Richmond-Raker & others, 2021), and by middle age, these individuals were better equipped to handle later-life health, financial, and social demands
- New content describing how parents can help their children develop self-control (Gottman, 2022)
- New content on efforts by Suniya Luthar and her colleagues (2021, 2022) to develop authentic connections groups in communities to provide support to families in highly stressful circumstances, such as the COVID-19 pandemic, and to increase families' resilience
- Revised description of Kohlberg's three levels of moral development
- Inclusion of a recent meta-analysis in which children evaluated moral rules as more generalizable and inalterable than conventional rules (Yoo & Smetana, 2022), and children viewed moral transgressions as more unacceptable and more deserving of punishment than conventional transgressions
- Coverage of a meta-analysis of 55 studies involving individuals from childhood through emerging adulthood that concluded engaging in higher levels of prosocial behavior was related to lower levels of internalizing and externalizing problems (Memmott-Elison & others, 2020)
- Discussion of a recent study that revealed harsh parenting was linked to a lower level of children's prosocial behavior (Bevilacqua & others, 2021)
- Description of a recent study in which maternal warmth was associated with a higher level of children's prosocial behavior (Kanacri & others, 2021)
- New content explaining that commitment to a moral identity involves behaving in a moral way, while engaging in moral disengagement shields an individual from thinking that he or she has done something immoral or wrong (Lapsley, LaPorte, & Kelley, 2022)
- Inclusion of recent research indicating that bullies frequently use moral disengagement strategies (Travlos & others, 2021)
- New content on how the brains of boys/men have more intrahemisphere connectivity, while the brains of girls/women have more interhemisphere connectivity (Grabowska, 2020)
- Update on how as students move from grades four to twelve, gender differences in reading and writing skills increase (Reilly, Neumann, & Andrews, 2019)
- Discussion of a recent study that found girls expressed more emotional concern for others than boys did (Trentini & others, 2022)
- Description of a recent study that revealed girls had much better self-regulation than boys did (van Tetering & others, 2020)
- Coverage of a recent study of more than 30,000 U.S. high school students which found that 20 percent had experienced school bullying and 15 percent had experienced cyberbullying (Webb & others, 2021). Sexual minority youth were more likely to report both types of bullying victimization than their heterosexual peers, while Black American and Latino adolescents were less likely to report both types of victimization. And non-Latino White gay/lesbian or bisexual youth reported more bullying victimization than non-Latino White heterosexual youth.

Chapter 10 (continues)

- Inclusion of a longitudinal study that revealed after being bullied, bullying victims' self-esteem decreased and this reduction in self-esteem was linked to further victimization (Choi & Park, 2021)
- Discussion of a recent Chinese study of adults 60 years of age and older that found those who had been the victims of bullying in childhood had more severe depressive symptoms than their counterparts who had not experienced bullying victimization as children (Hu, 2021)
- Description of a recent study in which friends' social support was linked to greater engagement in physical activity during adolescence (Lisboa & others, 2021)
- Inclusion of a recent experimental study of almost 1,900 middle school students that found enhancements to peer relations created by structured small-group learning (cooperative learning, for example) improved peer relations, reduced stress, decreased emotional problems, and promoted academic achievement (Van Ryzin & Roseth, 2021)
- Update on how the U.S. government suspended standardized testing during the 2020–2021 school year when the vast majority of schools switched from in-person classes to online learning in an effort to protect students and staff from COVID-19
- New main section on “Schools and the COVID-19 Pandemic” that includes content on how many students struggled with online learning (U.S. Agency for International Development, 2022)
- Coverage of a recent analysis in which 14,000 students were assessed in the spring of 2020 to evaluate their mental health and learning following the emergence of the COVID-19 pandemic (Authentic Connections, 2021). Students of color were found to be at greater risk for mental health and learning difficulties than non-Latino White students. Specific difficulties encountered by various ethnic groups also are described.
- Updated data on international comparisons of students' achievement in which a 2019 assessment of fourth- and eighth-grade students indicated that U.S. students placed fifteenth out of 56 countries in fourth-grade math and eighth out of 55 countries in fourth-grade science (TIMSS, 2019)
- Inclusion of recent research with 11- to 15-year-olds that revealed their belief that intelligence is malleable and capable of growth over time only predicted higher math engagement among students if they also had metacognitive skills to reflect on and be aware of the learning process (Wang & others, 2021)

- Description of recent research indicating that while some students have the ability to develop growth mindsets on their own, recent research by Carol Dweck and her colleagues (Yeager & others, 2022) found that sustaining growth mindset effects may require contextual effects, such as their teachers also having a growth mindset, to take root and flourish

Chapter 11: Physical and Cognitive Development in Adolescence

- Updates based on comments by leading expert John Schulenberg
- Coverage of a recent study in Taiwan that revealed the rate of decline in the average age at menarche was 0.43 years per decade in the last 30 years (Chow & others, 2020)
- Inclusion of a recent study that revealed prepubertal internalizing symptoms, such as depression, were linked to earlier pubertal onset in girls (Knight & others, 2021)
- Discussion of a recent study in which prenatal exposure to maternal stressful life events was associated with earlier pubertal onset in girls (Brauner & others, 2021)
- Description of a recent Italian study that early puberty occurred more often for girls after the onset of the COVID-19 pandemic than prior to its occurrence (Verzani & others, 2021)
- Coverage of a recent study of 11- to 14-year-olds in which those who had a negative body image because of social media had higher rates of depressive symptoms and online social anxiety, found it harder to make new friends, and were more socially isolated (Charmaraman & others, 2021)
- Inclusion of a recent meta-analysis that concluded earlymaturing boys and girls are more physically fit than their peers (Albaladegjo-Saura & others, 2021)
- Discussion of a recent study that found early-maturing boys were more physically fit than their peers but girls who matured on time were more physically fit than their early- or late-maturing counterparts (Nevill & others, 2021)
- Description of recent research indicating that the corpus callosum continues to thicken well into the third decade of life (Danielsen & others, 2020)
- Coverage of a recent research review that concluded an increase in integrative brain processes continues until 40 years of age (Edde & others, 2021)
- Inclusion of a recent research review that indicated higher childhood SES is associated with more efficient brain networks in adulthood (Tooley, Bassett, & Mackey, 2021)
- Updated data revealing that in 2019, 56.7 percent of twelfthgraders reported ever having had sexual intercourse (Underwood & others, 2020)

Chapter 11 (continues)

- Updated statistics on the probability of having sexual intercourse in the United States by age 20 (77 percent for boys; 79 percent for girls) (Martinez & Abma, 2020)
- Updated data indicating that for ninth- to twelfth-graders in 2019, 42.3 percent of Black Americans, 42.3 percent of Latinos, 38 percent of non-Latino Whites, and 15.6 percent of Asian Americans said they had experienced sexual intercourse (Underwood & others, 2020)
- New Connecting with Careers feature on Terrance Weeden, a pediatrician who is also a vocal advocate for LGBTQ youth
- Coverage of a recent study of Black American families in which family stress, such as economic stress and maternal psychological distress in single-family households, was linked to engagement in risky sex by adolescents (Brown, Simons, & Gibbons, 2021)
- Description of a recent study that found lower parental monitoring and school bonding were linked to engaging in earlier sexual risk-taking (Gottfredson & others, 2022)
- Inclusion of a recent study that revealed associating with antisocial peers predicted early engagement in sexual intercourse (Clark & others, 2021)
- Inclusion of a recent national study that found a substantial increase in the use of contraceptives by U.S. high school students the last time they had intercourse (54.4 percent in 2019 versus 46 percent in 1991; down from 60 percent in 2011) (Szucs & others, 2020)
- Discussion of recent research in which adolescent boys were more likely than adolescent girls to report condom use at last intercourse and consistent condom use in the last 12 months (Lindberg, Firestein, & Beavin, 2021)
- Updated data that found in 2020, the U.S. birth rate among 15- to 19-year-olds was 15.4 births per 1,000 females, the lowest rate ever recorded and less than half the rate in 2008 (41.5 births per 1,000 females) (Martin & others, 2022)
- Updated data indicating that in 2020, ethnic variations still characterized adolescent pregnancy, but rates are declining significantly among all ethnic groups (Martin & others, 2022)
- Description of a recent Canadian study that revealed 32.9 percent of adolescent pregnancies were rapid repeat pregnancies with the second pregnancy occurring within 33 months of the first (Ramage & others, 2021)
- New content on the impact of the COVID-19 pandemic in diminishing adolescents' use of health care (Goldman & others, 2021)
- New coverage of the especially high firearm homicide rate in Black American adolescent boys and emerging adult men and how the rate has recently increased (Centers for Disease Control and Prevention, 2022)
- Inclusion of a recent study of 15-year-olds that found adolescents who consistently lived in poor neighborhoods had the highest levels of poverty and anxiety (King & others, 2022). Adolescents who previously lived in poor neighborhoods but were able to exit them later showed no difference in depression and anxiety compared with adolescents who never lived in poor neighborhoods. All of these findings were more pronounced in girls than in boys.
- New coverage of disparities in adolescent health status related to poverty and ethnicity, especially in Black American and Latino families, caused by the COVID-19 pandemic (Heard-Garris & others, 2021)
- Description of a recent study of adolescents that found increased caffeine consumption, especially afternoon and evening use, was linked to later sleep onset, reduced total sleep time, and diminished sleep efficiency (Lunsford-Avery & others, 2022)
- Inclusion of national data indicating that the percentage of U.S. 12- to 19-year-olds who were obese increased from 12 percent for boys and 10.2 percent for girls in 1994 to 21.7 percent for boys and 19.6 percent for girls through 2018 (Forum on Child and Family Statistics, 2021)
- Description of national data that found U.S. high school students showed a linear decrease in their intake of fruits and vegetables since 1999, with 59.2 percent of high school students not eating vegetables one or more times in the last seven days in 2019 (Underwood & others, 2020)
- Discussion of a recent national survey that revealed in 2019, 23 percent of ninth- through twelfth-graders had engaged in physical activity for 60 minutes or more in each of the last seven days, compared with 28.7 percent in 2011 (Underwood & others, 2020)
- Coverage of a recent national survey in which adolescent girls were much less likely to engage in physical activity for 60 minutes or more per day in each of the last seven days (15.4 percent) than were boys (30.9 percent) (Underwood & others, 2020)
- Inclusion of a recent research review of 27 studies that concluded aerobic exercise was associated with adolescents' reduced body fat, lower fasting insulin, decreased inflammatory markers, and increased physical fitness (Lee, 2022)
- Discussion of a recent study in which adolescents who exercised more per week had better processing speed, selective attention, and concentration (Reigal & others, 2020)
- Inclusion of a recent study of 14-year-olds that revealed replacing at least some screen time with exercise reduced their emotional distress, but the largest reduction in emotional distress occurred when time spent in television watching and social media was replaced with participation in team sports

Chapter 11 (continues)

- Description of a recent study of 10- to 14-year-olds that found being physically inactive was associated with being a girl, not having sports facilities in the neighborhood, and not perceiving the neighborhood as a safe place (Judice & others, 2021)
- Coverage of a recent large-scale study conducted in the United States, United Kingdom, and the Netherlands in which 51.5 percent of adolescents reported getting less than 8 hours of total sleep time and 18 percent indicated that they experienced daytime sleepiness (Kocevska & others, 2021)
- Inclusion of a recent research review of 112 studies that concluded more physical activity and positive social relationships improved college students' sleep quality, while greater caffeine intake, higher stress levels, and irregular sleep-wake patterns decreased their sleep quality (Wang & Biro, 2021)
- Discussion of a recent study in which nearly half of all adolescent marijuana users reported driving after using the drug in the last 30 days, with the highest prevalence among heavy users (Hammig, Davis, & Jones, 2021)
- New statistics from the Monitoring the Future survey indicating that the percentage of adolescents reporting substance use decreased significantly in 2021 (Miech & others, 2022), the largest one-year decrease in overall illicit drug use reported since the survey began in 1975
- New commentary on why there was a significant decline in adolescent drug use during the COVID-19 pandemic, with potential pivotal reasons possibly involving drug availability, family involvement, differences in peer connections and peer pressure, or other factors (Miech & others, 2022)
- Updated national data on the remarkable decline in 2021 of adolescents' use of alcohol, nicotine, and marijuana (Miech & others, 2022)
- Coverage of a recent study in which both parent-adolescent relationships and deviant peer affiliations were linked to adolescent substance use, but deviant peer affiliations had a stronger effect on adolescents' use of multiple drugs (Greenwood & others, 2021)
- Inclusion of a recent study in which students in the first year of middle school had lower levels of adaptive coping and higher levels of maladaptive coping compared with students in elementary school, (Skinner & Saxton, 2020)
- Updated data on the continuing decline in school dropout rates overall and separately for Black American, Latino, Asian American, and non-Latino White adolescents. In 2020, the dropout rate for Black American adolescents (4.2 percent) was lower than for non-Latino White adolescents (4.8 percent) for the first time (National Center for Education Statistics, 2022)
- Discussion of recent research in which the more time adolescents spent with same-age friends, romantic partners, or siblings who had recently quit school, the greater their likelihood of dropping out of school themselves (Dupere & others, 2021)
- New content indicating that 90 percent of participants in the "I Have a Dream" program graduate from high school, compared with an overall rate of 74 percent of students from low-income backgrounds ("I Have a Dream" Foundation, 2022)

Chapter 12: Socioemotional Development in Adolescence

- Coverage of a recent meta-analysis of longitudinal studies tracking individuals from 5 to 28 years of age supporting the view of self-evaluations being domain-specific in that self-esteem was positive in the domains of academic abilities, social acceptance, and romantic relationships but were negative in the areas of morality, mathematics, and verbal abilities (Orth & others, 2021)
- New content on the increasing number of researchers who have described different types of narcissism (Donnellan, Ackerman, & Wright, 2021), with one of the most common distinctions being the difference between vulnerable and grandiose narcissism
- Inclusion of a recent study that found regardless of neighborhood context and socioeconomic advantage or disadvantage, adolescents' self-regulation predicted academic achievement (Davisson, Hoyle, and Andrade, 2021)
- Coverage of a recent Chinese study that revealed adolescent self-control was associated with physical and mental health in adulthood (Yang & Jiang, 2022)
- Description of a recent research review that found consistent improvement in self-regulation for curriculum-based interventions, mindfulness and yoga interventions, exercise interventions, and social and personal skills interventions (Pandey & others, 2018), with positive outcomes indicated for academic achievement, substance abuse, conduct disorders, social skills, and depression
- Discussion of a recent study using the narrative approach that found bidirectional links between identity confusion and depression, anxiety, and eating disorder symptoms (Potterton & others, 2022) Description of a 10-year longitudinal study conducted from early adolescence (age 13) into emerging adulthood (age 24) that confirmed the existence of a dual-cycle identity formation process (Becht & others, 2021)
- Discussion of a recent study of Latino emerging adults in which the bicultural harmony component of bicultural identity development was linked to lower levels of psychological stress (Cano & others, 2021)
- Coverage of a recent study of Latino youth that showed enhanced resilience against discrimination encounters when they had more family ethnic socialization experiences and engaged in greater ethnic identity exploration and resolution (Martinez-Fuentes, Jager, & Umaña-Taylor, 2021)

Chapter 12 (continues)

- Discussion of research by Adriana Umaña-Taylor and her colleagues (Safa & Umaña-Taylor, 2021; Umaña-Taylor & Drake, 2022) in which a positive ethnic identity is related to positive outcomes for ethnic minority adolescents
- New Connecting with Careers profile on Adriana Umaña-Taylor, a professor and researcher of ethnic-racial identities who studies immigrant families in the United States
- Inclusion of a recent study involving individuals from 12 to 34 years of age in which attendance at religious services declined with age, yet endorsement of the importance of religion increased and endorsement of the importance of prayer remained stable over time (Dew, Fuemmeler, & Koenig, 2020)
- Discussion of cross-cultural variations in adolescent religiosity (Jensen, 2021)
- Description of a study that revealed adolescents with a low level of parental monitoring engage in less effective executive functioning (Sangaawi, Adams, & Reissland, 2021)
- Coverage of recent research in which lower parental monitoring was linked to adolescents' greater use of alcohol and tobacco (Mills & others, 2021)
- Description of a recent German study that found a supportive autonomy parenting profile was linked to adolescents' positive academic and psychological development whereas a controlling autonomy parenting profile was associated with increased likelihood of psychopathology and impaired academic achievement (Teuber & others, 2022)
- Inclusion of a recent study of Lebanese adolescents that revealed those who were securely attached had lower rates of addiction to alcohol and cigarettes than their insecurely attached counterparts (Nakhoul & others, 2020)
- Discussion of a recent study that indicated insecure attachment was associated with depression and suicidal ideation in adolescents (Fattouh & others, 2022)
- Description of recent research with 8- to 15-year-olds that revealed high peer support at school was especially important in predicting mental health and well-being (Butler & others, 2022)
- Coverage of a recent research review of 19 studies that concluded secure attachment with parents in adolescence predicted positive relationships with peers and friends based on communication, support, intimacy, and trust (Delgado & others, 2022)
- Inclusion of recent research that found improved peer acceptance, dependability, and ease of making new friends were linked to a reduction in adolescents' depressive symptoms (Adedeji & others, 2022)
- Coverage of recent research in which adolescent peer struggles were linked to accelerated epigenetic aging at 30 years of age (Allen & others, 2022b). The epigenetic age measure consisted of combining DNA markers for physiological risk and stress factors associated with increased mortality and morbidity.
- New content on changes related to the COVID-19 pandemic, including its negative impact on adolescent peer relations (Orben, Tomova, & Blakemore, 2021)
- Inclusion of a recent study in which adolescent close friendship quality was a better predictor of adult peer and romantic outcomes, work performance, and depressive symptoms than parental reports of the parent-teen relationship (Allen & others, 2022b)
- Discussion of a recent study in which friends' use of nicotine and marijuana was linked to adolescents' use of these drugs (Herold & others, 2021)
- Description of a longitudinal study in which continuous singles (individuals who never dated from 10 to 20 years of age) reported lower life satisfaction in adolescence and early adulthood than moderate daters (Gonzales Aviles, Finn, & Neyer, 2021)
- Extensive expansion and updating of content on socioeconomic status and poverty (van Zweiten & others, 2021)
- Coverage of a recent research review of adolescents that concluded low SES is associated with lower volume and surface area of the brain's frontal lobes, amygdala, and hippocampus (Rakesh & Whittle, 2021)
- Inclusion of a recent study in which lower SES assessed in early adolescence was linked to lower cognitive control and higher risk-taking in late adolescence (Brieant & others, 2021)
- Discussion of a recent meta-analysis that concluded low SES is a meaningful contributor to the development of lower cognitive ability and achievement (Korous & others, 2022)
- Update on research by Suniya Luthar and her colleagues (Luther, Ebbert, & Kumar, 2021) focusing on ways that adolescents in high-achieving environments can be more resilient to the risks involved, such as parents placing less academic pressure on their adolescents and emphasizing that a balanced perspective on achievement also matters greatly
- Extensive expansion and updating of content on adolescent ethnicity, including an emphasis on adolescence and emerging adulthood as special junctures for ethnic identity development (Umaña-Taylor & Rivas-Drake, 2022)
- Description of a recent study of undocumented Guatemalan immigrant adolescents that found loneliness, social isolation, and work conditions were linked to depressive symptoms (Chavez, Gonzales-Backen, & Grzyacz, 2021)

Chapter 12 (continues)

- New section on “Racism and Discrimination”
- Coverage of recent research indicating that while Asian American adolescents had less anxiety and school isolation than non-Latino White adolescents, they experienced significantly more discrimination (Luther, Ebbert, & Kumar, 2021)
- Description of research in which students showed positive adjustment when they perceived their teachers to be supportive and understanding during the first three months of distance learning associated with the COVID-19 pandemic (Luthar, Pao, & Kumar, 2021)
- Inclusion of content on indigenous people having a long history of experiencing discrimination and racism that has received inadequate attention (NETWORK, 2021)
- New content on the “Intentional Parenting for Equity and Justice” program, which emphasizes the importance of having deliberate and purposeful conversations as well as engaging in activities that increase children’s and adolescents’ awareness of racial inequities and injustices such as systemic racism, racial stereotyping, and the harm caused by racial privilege for those who are excluded (Hughes, Fisheer, & Cabrear, 2020)
- Significantly expanded and updated coverage of media and screen time (Musa & others, 2022)
- Updated data indicating that 15- to 17-year-olds spent 3 hours and 4 minutes per day on screen time, with boys spending almost one hour more on screen time than girls (3 hours and 31 minutes a day versus 2 hours and 33 minutes a day) (Livingston, 2019)
- Recent data indicating that in 2020, 16- to 24-year-old girls preferred Instagram as their social platform, followed by WhatsApp; boys in this age range preferred Facebook, followed by WhatsApp (Geyers, 2021)
- New data indicating that the COVID-19 pandemic lockdown led to adolescents spending 76 percent more time on social media apps in 2020 than in 2019 (Influencer Marketing Hub, 2021)
- Inclusion of a recent study that revealed more time spent on social media was linked to heavier substance use in adolescence (Vannucci & others, 2020)
- Coverage of a recent research review that revealed adolescents’ higher use of social media is linked to increased depressive symptoms (Liu & others, 2022)
- Description of a recent research review that concluded high social media use by adolescents was linked to increased anxiety, stress, and depression (Shannon & others, 2022)
- Discussion of a recent study of university students that found approximately 23 percent of students can be classified as “smartphone-addicted” (Randjelovic & others, 2021)
- Recent research indicating that social media has helped adolescents cope with anxious feelings during the COVID-19 pandemic (Cauberghe & others, 2021)
- Description of a recent study that found neighborhood poverty was linked to delinquency in adolescence, especially through maternal stress and adverse childhood experiences (Wang, Choi, & Shin, 2020)
- Coverage of a recent national survey that found 13.8 percent of 12- to 17-year-olds had experienced at least one major depressive episode in the past year (Mental Health America, 2021)
- Coverage of a recent Chinese study that found adolescents’ perceived stress was linked to subsequent depressive symptoms (Fu, Ren, & Liang, 2021)
- New Chinese study in which adolescents showed more depressive symptoms after the appearance of COVID-19, but engaging in more physical activity during the quarantine helped to buffer the association between the pandemic and depressive symptoms (Ren & others, 2021)
- Inclusion of a recent study that revealed parental depression, rejection, and low warmth were risk factors for adolescent depression (Johnco & others, 2021)
- New study indicating that from 2009 to 2019, the percentage of ninth- to twelfth-grade U.S. students who thought seriously about suicide increased from 14 to 18.8 percent (Underwood & others, 2020)
- New national study indicating the rate at which girls 12 to 17 years of age visited an emergency department for suspected suicide attempts increased by 51 percent in February and March of 2021 compared with the same time period in 2019 prior to the COVID-19 pandemic; among adolescent boys in this time frame, emergency department visits involving suspected suicide attempts increased by 4 percent (Yard & others, 2021)
- New research with more than 290,000 adolescents across a four-year period indicating that the highest stressor for suicidal ideation was peer conflict, followed by family circumstances such as conflict with parents (Kim, 2021)
- New Connecting with Careers feature on Yolanda Curry, a high school counselor
- New research indicating that the Fast Track intervention during childhood decreased the probability of suicidal ideation and hazardous drinking in adolescence and emerging adulthood as well as opioid use in emerging adulthood (Godwin & The Conduct Problems Prevention Research Group, 2020)

Chapter 13: Physical and Cognitive Development in Early Adulthood

- Revisions based on comments from leading expert John Schulenberg
- New data on the increased number of people living with their parents, with the most significant group being 18- to 24-year-olds (71 percent in 2020) (Fry, Passel, & Cohn, 2020)

Chapter 13 (continues)

- Updated data on the increasing percentage of first-year college students who rate “being well off financially” or “contributing something meaningful” as “essential” or “very important” in their life (Stolzenberg & others, 2020)
- Updated data on the increasing percentage of first-year college students who report that they frequently or occasionally feel overwhelmed, depressed, or anxious (Stolzenberg & others, 2020)
- New discussion of how the COVID-19 pandemic dramatically changed the way first-year college students experienced education in 2019 and 2000, as well as the increasing return to inperson classes in 2021 (Sorgo & others, 2022)
- Description of a recent study which found that after the onset of the COVID-19 pandemic, college students’ externalizing problems and attention problems increased (Copeland & others, 2021)
- Inclusion of a study that revealed more than half of college students reported high levels of stress related to taking online classes during the COVID-19 pandemic (Sorgo & others, 2022)
- Updated U.S. data indicating that 39.8 percent of adults 20 to 39 years of age were classified as obese in 2020, which represents a 11 percent increase since 2000 and a 7 percent increase since 2012 (Centers for Disease Control and Prevention, 2022)
- Updated data on obesity in different ethnic groups in 2020, with Black American (49.9 percent) and Latino (45.6 percent) adults having the highest rates (Centers for Disease Control and Prevention, 2022)
- Description of a 2020 international comparison of 33 countries that found Mexico had the highest overweight or obesity rate (75 percent) followed by the United States (73 percent); Japan had the lowest rate (27 percent), followed by South Korea (34 percent) (OECD, 2022)
- Coverage of a recent study in which women, especially those who were overweight, reported increased anxiety, depression, and loneliness during the COVID-19 pandemic (LofranoPrado & others, 2021)
- Updated data indicating that in 2020, 28 percent of U.S. college students reported having had five or more drinks in a row at least once in the last two weeks (Schulenberg & others, 2021)
- Updated data in Figure 3 from the Monitoring the Future study at the University of Michigan showing that in 2020 binge drinking peaked at 21 to 26 years of age, with 31 percent in this age group reporting they had engaged in binge drinking at least once in the last two weeks (Schulenberg & others, 2021)
- Coverage of a recent Korean study that found binge-drinking college students had deficits in memory and executive function (Kang & Kim, 2022)
- Updated data indicating that cigarette use continued to decline to all-time lows among young adults in 2020, with annual prevalence down to 21 percent, 30-day prevalence down to 9.5 percent, daily prevalence down to 5.3 percent, and half-pack-a-day prevalence down to 2.8 percent (Schulenberg & others, 2021)
- New survey showing that in 2020, 30-day prevalence of vaping nicotine increased to 14 percent among 19- to 30-year-olds overall, with the highest prevalence found among 18- to 20-year-olds at 21 to 22 percent, and prevalence declining thereafter across age groups (Schulenberg & others, 2021). Thus, for emerging adults, vaping nicotine quickly has become the main way they use nicotine.
- New research indicating a dramatic increase in marijuana use by emerging adults (Schulenberg & others, 2021)
- New national survey indicating that in 2020 marijuana use in the last 30 days was highest among 21- to 26-year-olds (44 to 47 percent), then declined in older age groups (Schulenberg & others, 2021)
- New data from a 2020 national study indicating that vaping marijuana is rapidly increasing among college students, with a 30-day prevalence being highest among individuals in their early to mid-twenties (Schulenberg & others, 2021)
- Discussion of a recent study indicating that across the college years, rates of kissing, touching, performing and receiving oral sex, and engaging in penetrative sex are increasing (Lefkowitz & others, 2019). Also in this study, contraceptive use decreased during the college years, especially for men and for students in serious romantic relationships.
- Description of a recent research review that found, overall, individuals rated their casual sexual relationships positively (Wesche, Claxton, & Waterman, 2021). They also reported that these casual sexual encounters were associated with short-term declines in emotional well-being. Women and individuals with less permissive attitudes toward casual sexual encounters experienced worse emotional outcomes and higher rates of alcohol use prior to casual sexual encounters.
- Inclusion of a recent study that revealed individuals participating in a “friends with benefits” relationship reported that sexual exclusivity is an important rule for this type of relationship (van Raalte & others, 2022)
- Coverage of a recent national U.S. survey indicating that 30.9 percent of men and 19.1 percent of women 18 to 24 years of age reported being sexually inactive in the past year (Ueda & others, 2020). Sexual inactivity increased among men 18 to 24 and 25 to 34 years of age from 2000 to 2018, and sexual inactivity increased across the same time period for women from 25 to 34 years of age.
- Description of a recent study in which sexual minority reports of past-year general discrimination, victimization, and health care discrimination peaked in early adulthood and then again in middle adulthood (Rice & others, 2021)

Chapter 13 (continues)

- Updated data indicating that in 2019, approximately 1.2 million people in the United States were living with an HIV infection, with approximately 34,800 new HIV infections diagnosed that year (HIVgov, 2021)
- Updated global data showing that the total number of individuals living with HIV was 37.7 million in 2021, with the majority of individuals with HIV living in sub-Saharan Africa (UNAIDS, 2022)
- New data indicating that in 2020, there were 1.5 million new cases of HIV worldwide, which was a reduction of 52 percent since the peak in 1997 (UNAIDS, 2021)
- Coverage of a recent study that found increasing rates of rape among college students (Koss & others, 2022), with 33.4 percent of college women reporting that they had experienced rape or attempted rape in 2015, compared with 27.9 percent in 1985
- Inclusion of a recent study in which almost half (48.5 percent) of rape victims had PTSD (Nothling & others, 2022)
- Discussion of the No Means No Worldwide program (2021) that has been effective in reducing the incidence of sexual assault in the African countries of Kenya and Malawi, with the organization's 12-hour curriculum emphasizing interactive verbal skills, role playing, and other techniques to encourage participants to speak up, prevent, or intervene in a sexual assault
- Coverage of recent research indicating that during the COVID-19 pandemic, college students with more grit reported having better eating and sleeping behaviors than those who had less grit (Martin & others, 2022)
- Inclusion of content noting that in the spring of 2022, employers planned to hire 31.6 percent more graduates from the class of 2022 than they had hired from the class of 2021 (NACE, 2022)
- Description of how the contexts in which people work in the United States and around the world changed dramatically in 2020 as the onset of the coronavirus pandemic forced many employers to require their employees to work at home rather than in an office, classroom, or other settings in order to comply with social distancing and quarantine requirements in their communities (Kniffin & others, 2021)
- Coverage of a new book, *Overload: How Good Jobs Went Bad and What We Can Do About It* (Kelly and Moen, 2020), that describes how employees and managers can adopt creative and practical work redesigns that give workers more control over how and where they work, leading to improvements in employees' health, well-being, and ability to manage their personal and work lives
- New content on the major increase in unemployment occurring at the onset of the coronavirus pandemic in 2020, followed by a significant drop in May 2022

- New Connecting with Careers profile on Anna Boyer-Chadwick, an academic advisor whose university's advising and retention program is a nationally recognized model for Latino student success Coverage of a recent study in which more mothers than fathers were dissatisfied with their work-family balance and their partner's share of the load before the COVID-19 pandemic (Craig & Churchill, 2020)

Chapter 14: Socioemotional development in Early Adulthood

- Inclusion of recent research in which infants who showed higher levels of inhibition at 14 months became reserved and introverted adults with lower social functioning with friends and family at age 26, with a higher risk of developing anxiety and depression (Tang & others, 2021)
- Discussion of a new study in four European countries that found adult attachment security predicted the quality of intimate couple relationships during the COVID-19 lockdown (Eder & others, 2021)
- Description of a recent research review that concluded having a secure attachment style reduced suicidal risk, while having an insecure attachment style made it more difficult to cope with relationship issues and was associated with increased suicidal risk (Zortea & others, 2021)
- Inclusion of a recent study of 1.8 million online daters from 24 countries, in which in every country, a person's resource-acquisition ability (as indicated by level of education and income) was positively linked to the amount of attention they received from other site users (Jonason & Thomas, 2022). Resource-acquisition ability increased the amount of attention received by men almost 2.5 times that of women, with the gender difference occurring in every country.
- Inclusion of updated data reporting that in 2021, 48.2 percent of individuals 18 years of age and older were single in the United States (U.S. Census Bureau, 2021)
- Coverage of a recent national poll in which singles were making more time for their romantic search, refining what they were looking for in a partner, and rethinking how and where they intended to search for love in the face of the COVID-19 pandemic (Match.com, 2020)
- New cross-cultural study of more than 7,000 individuals in 25 countries confirming the universality of Sternberg's triarchic theory (Sorokowski & others, 2021)
- New Connecting Through Research feature on "The Role of Friendship in a Romantic Relationship Breakup" (Clark & others, 2020)
- Discussion of a recent national survey of 5,000 single U.S. adults in which a majority changed their priorities after the onset of the COVID-19 pandemic, both in becoming better versions of themselves and in reconsidering what they were looking for in a romantic partner (Match.com, 2021)

Chapter 14 (continues)

- Updated data on the increasing percentage of adults living with an unmarried partner, with an equal number (17 percent) of 18- to 24-year-old men and women living with an unmarried partner while a greater share of 25- to 34-year-old women (12 percent) than men (7 percent) lived with an unmarried partner (U.S. Census Bureau, 2021)
- Coverage of a recent study in nine European studies that revealed spending more time in unmarried cohabitation was associated with an increased tolerance of divorce (Kreidl & Žilínčiková, 2021)
- Inclusion of a recent study that found no differences between cohabiting couples and married couples at the initial assessment in relationship adjustment, although cohabiting mothers who stayed with their partner over the 10 years showed significantly greater declines in relationship adjustment over the 10 years compared with married mothers (Foran & others, 2022)
- Update on marital trends indicating that in 2021, 51.8 percent of adults in the United States were married, down from 72 percent in 1960 (U.S. Census Bureau, 2021), with the average age for a first marriage climbing to 30.4 years for men and 28.6 years for women, higher than at any previous point in history
- Updated data showing that the U.S. divorce rate has declined in recent decades, peaking at 5.1 divorces per 1,000 people in 1980 and declining to 2.9 divorces per 1,000 in 2018 and then 2.0 divorces per 1,000 in 2021 (U.S. Census Bureau, 2021)
- Description of a recent study that found it is not unusual for remarried adults to carry negative patterns that produced failure in an earlier marriage into their current remarried relationship (Yazdani & others, 2021) Revised section heading, “LGBTQ Adults”
- Expanded and updated content on transgender adults (Vyas & others, 2021)
- Inclusion of a recent study of transgender individuals in which gender affirmation—being recognized as one’s gender identity, gender expression, or gender role—was associated with a lower probability of suicidal ideation and psychological distress, while discrimination was linked to a higher probability of suicidal ideation and psychological distress (Lelutiu-Weinberger, English, & Sandanapitchai, 2020) Discussion of a recent study that indicated victimization and discrimination predicted increased suicidal ideation, while community connectedness reduced suicidal ideation (Rabasco & Andover, 2021)
- Description of recent research indicating that psychotherapy targeting internalized stigma and non-affirmation experiences could be effective in reducing gender-related stress and improving resilience (Budge, Sinnard, & Hoyt, 2020)
- New Connecting with Careers profile on Stephanie Budge, a psychotherapist and college professor who specializes in transgender research

- New section, “Going Beyond Gender as Binary,” that reflects Janet Shibley Hyde and her colleagues’ (2019) recent conclusion that gender is a mosaic that includes a number of categories rather than a binary division consisting of only two categories—girls/women and boys/men

Chapter 15: Physical and Cognitive Development in Middle Adulthood

- Updates based on a U.S. Census Bureau (2020) assessment that in 2019, 120,255,062 people in the United States were 40 to 64 years of age, which accounts for 26.7 percent of the U.S. population
- Updated data on weight gain in middle age indicating that the prevalence of obesity in middle-aged adults (44.3 percent) was higher than in younger adults (39.8 percent) and older adults (41.5 percent) (Stierman & others, 2021)
- Coverage of a recent meta-analysis that concluded older adults with sarcopenic obesity are at higher risk of adverse musculoskeletal outcomes such as falls and fractures than are individuals with sarcopenia, obesity, or neither condition (Gandham & others, 2021)
- Inclusion of a recent study of individuals 55 years of age and younger in which those with hypertension had lower memory test scores (Teles de Menezes & others, 2021)
- New study indicating that most of the Life’s Simple 7 actions to improve cardiovascular conditions were linked to greater longevity (van Oort & others, 2021)
- New Connecting Through Research feature describing an aerobic exercise intervention that reduced the symptoms of middle-aged adults with metabolic syndrome (Morales-Palomo & others, 2019), and a 5-year follow-up study that revealed exercise training not only reduced metabolic syndrome symptoms but also decreased drug use for metabolic syndrome (Morales-Palomo & others, 2021)
- Discussion of a recent Norwegian study of individuals 40 years of age and older in which 42 percent of women and 52 percent of men reported sleeping less than 7 hours per night (Sivertsen & others, 2021)
- Coverage of a longitudinal study that indicated persistent short sleep duration of six hours per night at 50 and 60 years of age was associated with increased risk of dementia (Sabia & others, 2021)
- New content indicating that in 2018, 52 percent of U.S. adults had at least 1 of 10 selected diagnosed chronic conditions (such as arthritis, cancer, and cardiovascular disease) and 27 percent had multiple chronic conditions (Boersma, Black, & Ward, 2020)
- Updated data indicating that cancer continued to be the main cause of death in middle-aged individuals in 2019, followed by cancer (Heron, 2021)

Chapter 15 (continues)

- Inclusion of a recent cross-cultural study that found middle-aged women in China and Japan had a lower prevalence of hot flashes than their counterparts in the United States and Canada (Shea, 2020) Description of a research review of recent studies that concluded hormone replacement therapy (HRT) initiated in postmenopausal women near the onset of menopause confers a cardioprotective benefit, in contrast with other studies that simply showed that HRT does not cause harm (Taylor & others, 2021)
- Discussion of recent research that revealed HRT contributes to a decreased incidence of post-menopausal sarcopenia (Onambele-Pearson & others, 2021)
- Coverage of a recent research review that concluded testosterone replacement therapy (TRT) improves sexual function in men who have hypogonadism, although positive data on other outcomes, such as reduced risk of cardiovascular disease, are inconclusive (Corona, Torres, & Maggi, 2020)
- Inclusion of a recent study that revealed sexual satisfaction in 40- to 64-year-olds was associated with a lower level of physical illnesses, better self-rated health, absence of depression, higher importance placed on sexuality and intimacy, having a partner, living with a partner in the same household, and experiencing a lower level of loneliness (Buczak-Stec, Konig, & Hajek, 2021)
- Description of a recent study in which better physical fitness in middle and late adulthood was linked to faster processing speed (Orland & others, 2021)
- Updated data indicating that in 2020 in the United States, 80.6 percent of 45- to 54-year-olds were in the workforce (a decrease of 1.3 percent since 2000, but an increase of 1.2 percent since 2015) and 64.7 percent of 55- to 64-year-olds were in the workforce (an increase of 9.3 percent since 2000 and an increase of .6 percent since 2015) (Bureau of Labor Statistics, 2021)
- Discussion of a recent study of middle-aged adults that found work engagement and occupational self-efficacy were associated with work ability (Wallin & others, 2021)
- Inclusion of a recent study of 40- to 74-year-olds that revealed engaging in greater physical activity was associated with a reduced risk of dementia (Kitamura & others, 2022)
- Description of a recent study conducted during the COVID-19 pandemic that found a link between increased engagement in leisure-time activities and improved mental health, supporting leisure's role in facilitating stress alleviation and enhancing well-being during taxing events such as the COVID-19 pandemic (Shen & others, 2022) Coverage of a national survey conducted in 2020 in which individuals reported religious affiliation had decreased to 47 percent, representing less than half of the adult population for the first time since the question was initially asked more than 80 years ago (Gallup, 2021)

- Coverage of a survey indicating that more U.S. adults than people in other advanced economies indicated that the COVID-19 pandemic had strengthened their religious faith, with nearly 30 percent of U.S. adults reporting that the outbreak had boosted their faith (Pew Research Center, 2021)
- Discussion of a recent research review that concluded aging adults who have a sense of meaning in life have better psychological and social functioning as well as adaptation to traumatic events (Dezutter, Haugan, & Saarelainen, 2022)
- Inclusion of a recent research review that concluded the ability to live a meaningful life following cardiovascular disease events, such as a heart attack or stroke, is associated with lower stress and better mental health (Vos, 2021)
- Description of a recent study that revealed meaning in life predicted less stress and worry about negative effects of the COVID-19 pandemic (Humphrey & Vari, 2021)

Chapter 16: Socioemotional Development in Middle Adulthood

- Description of a recent study of grandparents aged 40 years and older that revealed grandchildren's respect for their grandparents increased grandparents' sense of generativity and their life satisfaction (Scott & others, 2022)
- Coverage of a recent study of college students that found daily hassles predicted subsequent health complaints (Tran & others, 2021)
- Inclusion of a 45-year longitudinal investigation in which individuals who had better self-control in childhood aged more slowly in their bodies and showed fewer signs of aging in their brains by middle age and were better equipped to manage a range of later-life health, financial, and social demands (Richmond-Raker & others, 2021). Self-control in middle age was associated with aging outcomes after controlling for childhood self-control, indicating that midlife might still be a window for improving self-control.
- Discussion of a recent longitudinal study of U.S. adults 50 years of age and older in which an increase in self-control across four years was linked to better health behavior (increased physical activity, fewer sleep problems), higher psychological well-being (positive affect, life satisfaction, optimism, purpose, and mastery), lower psychological distress (depression and hopelessness), decreased loneliness, and more contact with friends (Hong & others, 2021)

Chapter 16 (continues)

- Description of recent research that found individuals high in conscientiousness tended to live longer (Iwasa & others, 2022); were less likely to be obese (Cheng & others, 2020); showed greater distress during the COVID-19 pandemic (Brosch & others, 2022); had greater motivation at work (Sunwunmi, 2022); were less likely to engage in compulsive buying as college students (Otero-Lopez, Santiago, & Castro, 2021); were less likely to have an Internet gaming disorder (Chew, 2022); and had greater life satisfaction (Heilmann & others, 2021)
- Inclusion of recent research indicating that individuals high in agreeableness were more motivated at work (Sunwunmi, 2022)
- Coverage of recent research that found individuals high in extraversion lived longer (Iwasa & others, 2022)
- Discussion of recent research in which individuals with high neuroticism were more likely to experience stress and loneliness in times of crisis such as the COVID-19 pandemic (Ikizer & others, 2022) and more likely to have an Internet gaming disorder (Chew, 2022)
- Coverage of a recent study that revealed in all 61 countries studied, individuals with above-average optimism had better well-being (Baranski & others, 2021)
- New Connecting Through Research feature on recent research that found being more optimistic and experiencing higher social support in middle age reduced the negative effects of growing up as a child in an environment characterized by adversity and disadvantage (Non & others, 2020)
- Coverage of a recent study of 18- to 84-year-olds in which having a happy relationship or marriage, having children, and being there for others were the life goals rated as most important across almost the entire adult life span, with having a happy relationship or marriage differing strongly by gender, being more important for women up to middle adulthood but more important for men in late adulthood (Burchinger & others, 2022)
- Discussion of a longitudinal study in which hostile marital interactions increased couples' psychological distress, healthrisk behaviors, and body mass index (BMI) in early middle age, which led to an increased vulnerability for physical illness in later life (Lee & others, 2021)
- Inclusion of content indicating that since 2010, the divorce rate has stagnated among middle-aged adults but has continued to increase in older adults (Brown & Lin, 2022)
- New data showing that 36 percent of adults who are getting divorced today are 50 years of age and older (Brown & Lin, 2022)
- Description of a longitudinal study that revealed women who divorced at age 50 and older experienced a 45 percent drop in their standard of living, whereas the standard of living for divorced men only decreased by 21 percent (Lin & Brown, 2021). While re-partnering reversed most of the economic costs of divorce for women in this age group, few formed new co-residential partnerships following the divorce.
- Updated data indicating that from 2001 to 2017, the number of grandparents in the United States grew by 24 percent— from 56 million to 70 million (AARP, 2019)
- Coverage of a recent Japanese study in which caring for at least one co-residing grandchild age 6 or younger was neither detrimental nor beneficial to the grandparents' health (Oshio, 2021)
- Inclusion of a research review of studies in 10 countries that revealed grandchildren raised by grandparents had adverse mental/behavioral health and educational outcomes compared with their peers raised by biological parents (Xu & others, 2022)

Chapter 17: Physical development in Late Adulthood

- Updated data indicating that in 2019, life expectancy in the United States was 78.8 years but decreased to 77.8 years in 2020 because of the extensive increase in deaths during the COVID-19 pandemic (Arais, Tehada-Vera, & Ahmad, 2021)
- New content and recent data on ethnic and gender differences in life expectancies, including decreases in life expectancy in 2020 because of the COVID-19 pandemic
- Updated data indicating that of June 2022, the oldest living person in the world was 118-year-old Lucile Randon of France and the oldest living person in the United States was 114-year-old Bessie Hazel Plummer of Massachusetts
- New content on the increasing interest in dividing late adulthood into four groups: (1) young old (65–74), (2) middle old (75–84), (3) oldest old (85+), and centenarians (100+)
- New content on the role of three of the sirtuins, SIRT 1 (Han & others, 2022), SIRT 6 (Yuan & others, 2022), and SIRT 7 (Lagunas-Rangel, 2022), in DNA repair and greater longevity
- New content on how the death toll from the COVID-19 pandemic in 2020 illustrated the devastating impact of severe viral diseases on the already declining immune system function of older adults (Witkowski, 2022)
- Coverage of a recent study in which the corpus callosum began to show protracted decline during the mid-to-late fifties, followed by further decline (Danielsen & others, 2020)
- Inclusion of a recent study of mice that found chronic stress followed by social isolation decreased hippocampal neurogenesis (Du Preez & others, 2021)

Chapter 17 (continues)

- Discussion of a recent study of older adults that revealed higher frequency and duration of awakenings throughout the night were linked to higher levels of frailty and shorter longevity (Guida & others, 2021)
- New commentary on how a lack of sleep cause health difficulties, and conversely, certain physical problems can cause older adults to get inadequate sleep, with examples including the aches and pains of arthritis, breathing problems involving sleep apnea, and prostate problems causing men to get up multiple times during the night to urinate
- New content on sleep difficulties being increasingly recognized as a risk factor for Alzheimer disease (Andre & others, 2021)
- Description of recent research indicating proprioceptive training (balancing on one leg or walking toe to heel in a straight line, for example) reduced falls and increased balance and mobility in older adults (Espejo-Antunez & others, 2020)
- Coverage of a recent meta-analysis that concluded vision impairment was linked to cognitive decline and dementia (Shang & others, 2021)
- Inclusion of a recent study in which older adults with cataracts had a higher frequency of falls (Dos Santos Tavares & others, 2022)
- Discussion of recent research that found older adults' hearing problems were linked to increased falls (Wang & others, 2022), frailty and disability in daily living activities (Frion & others, 2022), loneliness (Huang & others, 2021), less social engagement (Shukla & others, 2021a), depression (Shukla & others, 2021b), and dementia (Chern & others, 2022)
- Description of recent studies indicating that older adults with dual vision and hearing impairment had a significant decline in cognitive functioning (Parada & others, 2021); increased frailty (Zhao & others, 2022); and increased risk of dementia (Kuo & others, 2021)
- Inclusion of a recent study that found decreased olfactory function in older adults was linked to lower sexual motivation and less emotional satisfaction with sex (Siegel & others, 2021)
- Discussion of a recent study of adults 65 years of age and older that revealed those with olfactory dysfunction were likely to die earlier (Choi & others, 2021)
- Updated data indicating that in 2018, 75.2 percent of men and 73.9 percent of women 60 years of age and older had hypertension (high blood pressure) (Ostchega & others, 2020)
- New commentary on how it is important to note that one of the main reasons some older adults are not having sex is that they are unpartnered, especially in the case of widowed women
- Coverage of a recent national study of 65- to 80-year-olds who were asked about their sexual activity and sexual health (University of Michigan, 2018). Forty percent indicated they currently were sexually active, with sexual activity decreasing with age (46 percent age 65 to 70, 39 percent age 71 to 75, and 25 percent age 76 to 80). Men were more likely to report being sexually active (51 percent) than women (31 percent).
- Discussion of a recent study of 55- to 84-year-olds that revealed 60 percent of the individuals experienced their sexuality as enjoyable and 44 percent as important (Beerepoot & others, 2022), with greater longevity among those who enjoyed their sexuality and perceived it as important
- Inclusion of a recent study that found older lesbian, gay, and bisexual adults were as likely to remain sexually active as older heterosexuals (Brennan-Ing & others, 2021). Gay and bisexual men were more likely than heterosexual men to report some sexual problems. Regardless of sexual orientation, older adults rarely had their sexual health needs addressed in health-care settings.
- Updated data indicating that in 2019, heart disease (25.1 percent) continued to be the main cause of death in U.S. adults 65 years of age and older, followed by cancer (20.6 percent) (Heron, 2021). In U.S. adults age 85 and older, heart disease caused more deaths (28.7 percent) than cancer (11.9 percent). Added commentary that during the height of the COVID-19 pandemic, COVID-19 became the third leading cause of death for older adults in the United States
- New and updated content on the causes of death in various ethnic groups, with heart disease being the main cause of death for non-Latino Whites, Black Americans, and Native Americans, followed by cancer (Heron, 2021) and cancer being the main cause of death for Latinos and Asian Americans, followed by heart disease
- Coverage of a recent meta-analysis that found aerobic exercise improved functional ability, reduced pain, and increased the aerobic capacity of individuals with arthritis (Ye & others, 2022)
- Description of a study involving a 25-year follow-up that revealed an association between weekly exercise time and all-cause mortality, with the lowest risk of death for individuals exercising 2.6 to 4.5 hours per week (Schnohr & others, 2021)
- Discussion of recent research indicating that resveratrol was linked to improving systolic blood pressure (Weaver & others, 2021), decreasing pulmonary arterial hypertension (Mirhadi & others, 2021), and suppressing tumor growth (Brockmueller & others, 2021)
- Description of a recent meta-analysis that concluded elastic band resistance training improved older adults' lower body function and muscle quality (Herda & Nabavizadeh, 2021)

Chapter 18 (continues)

- Coverage of a recent research review that concluded exercise is an effective behavioral intervention for improving mitochondrial health and cellular antioxidant capacity in older adults (Lippi & others, 2022)
- Inclusion of a recent study that revealed a 12-week aquatic exercise program for older women improved their immune function and mood (Lee, Lim, & Kim, 2021)
- Discussion of a recent study of older adults that found exercise reduced the incidence of subsequent falls in those with previous falls, and that faster processing of information increased the effectiveness of exercise in reducing subsequent falls (Lu-Ambrose & others, 2021)
- Description of a recent study of older adults with a mean age of 75 years in which moderate and intense exercise reduced their risk of cognitive impairment (Endeshaw & Goldstein, 2021)
- New and updated content on what is called the “obesity paradox” that suggests older adults who are overweight or obese are not at increased risk for health problems or decreased longevity. However, many studies do support a connection between obesity measured by BMI and health risks in older adults (Santamaria-Ulloa & others, 2022).
- Inclusion of a recent large-scale study of more than 7,000 individuals 60 years of age and older that revealed individuals with obesity had an increased burden of multimorbidity (having two or more chronic conditions) and functional limitations compared with individuals of normal weight (Lynch & others, 2022)
- Coverage of a recent study that found obesity (as measured by BMI) was associated with increased risk of death in older adults with COVID-19 (Sharma, 2021)
- Inclusion of a recent research review that indicated calorie restriction reduces inflammation in normal brain aging and some neurodegenerative diseases, such as Alzheimer disease (Fontana & others, 2021)
- New content on the COVID-19 pandemic raising special concerns in 2020 about the spread of the virus in nursing homes (Lafuente-Lafuente & others, 2022). As of June 30, 2021, nursing home and assisted living facilities accounted for 31 percent of deaths caused by COVID-19.
- Description of a recent study of 70- to 89-year-olds in which better processing speed was linked to the absence of disease component of successful aging (Bosnes & others, 2022)
- Inclusion of a recent study of drivers 70 years of age and older that revealed slower visual processing was linked to higher crash rates (Swain & others, 2021)
- Discussion of a recent study in which alertness training improved the visual processing speed of older adults (Penning & others, 2021)
- Description of a study of 60- to 80-year-olds that indicated engaging in 100 sessions of cognitive mobile games designed to train and challenge a person’s brain increased their processing speed (Bonnechere & others, 2021)
- Coverage of a recent research review of game-based training and older adults’ cognition in which the training improved their selective attention (Wang & others, 2021)
- Inclusion of a recent study of adults age 80 years and older that revealed those with superior episodic memory had better attention and executive function than their counterparts with average-for-age episodic memory (Maher & others, 2021)
- New content on an important aspect of episodic memory being mental time travel, including research by Daniel Schacter and his colleagues (Maher & others, 2021; Schacter & Addis, 2007)
- New study on how older adults remembered fewer episodic details from the past and imagined fewer episodic details about the future than younger adults did (Madore & Schacter, 2016)
- Discussion of a recent meta-analysis in which interventions that increased older adults’ physical exercise improved their working memory (Zhidong & others, 2021)
- Coverage of a recent study of 15- to 80-year-olds in which working memory began to decline at 36 years of age, followed by another clear decline in both verbal and visual-spatial working memory at 66 years and older (D’Antuono & others, 2022)
- Inclusion of a recent meta-analysis that found prospective memory training of older adults was effective in a number of studies, with most of the effective training regimes consisting of cognitive and strategy-based memory training (Tse & others, 2022)
- Discussion of a recent research review that indicated mental imagery (using external aids such as lists, planners, and calendars) can be a useful strategy-based approach to facilitate prospective memory in older adults (Tsang & others, 2022)
- Coverage of a recent study that revealed when older adults use a self-imagination strategy, their memory improves (Zhang & others, 2022)

Chapter 18: Cognitive Development in Late Adulthood

- Revisions based on comments by leading experts Deborah Carr, Patricia Reuter-Lorenz, and Phyllis Moen
- Coverage of a recent German study of 40- to 85-year-olds in which faster processing speed was related to greater life satisfaction (Siedlecki & others, 2020)
- Discussion of a recent study that indicated processing speed was an important indicator of older adults’ daily functioning competence (Roye & others, 2022)

Chapter 18 (continues)

- Description of a recent study that indicated having confidence in the effectiveness of using retrieval memory strategies and using them quickly improved the memory of older adults more than for younger adults (Frank & others, 2022)
- Inclusion of a recent research review that concluded exercise training, especially aerobic exercise, improves older adults' memory through better blood circulation, synaptic plasticity, and possibly neurogenesis (Babaei & Azari, 2022)
- Description of a recent study of older adults that found the highest-performing group of participants on executive function tasks was differentiated from the lowest-performing group by educational attainment, more novel cognitive activity, lower pulse pressure, younger age, faster gait, lower BMI, and better balance (Caballero & others, 2021)
- Coverage of a recent meta-analysis that concluded regular physical exercise training, especially aerobic exercise and mind-body exercise (combined body movement, mental focus, and controlled breathing), improved working memory, cognitive flexibility, and inhibitory control of executive function in healthy older adults (Xiong & others, 2021)
- Description of a recent study in which a moderate-intensity aerobic training program increased prefrontal cortex and executive functioning (Park, 2022) Inclusion of a recent study in which older adults' metacognitive accuracy declined beyond the expected decline in task performance (Overhoff & others, 2021)
- Coverage of a recent study that revealed older adults with a lower level of metamemory engaged in impaired financial decision making (Yu & others, 2022)
- Discussion of a recent study of 53- to 86-year-olds that found engaging in present-moment attention was linked to better affective well-being (Mahlo & Windsor, 2021)
- Description of recent research that revealed a mindfulness-awareness program improved the working memory and divided attention of older adults with mild cognitive impairment (Yu & others, 2021)
- Inclusion of a recently expanded integrative model of wisdom that proposes in challenging real-life situations, non-cognitive wisdom components (an exploratory orientation, concern for others, and emotion regulation) moderate the effect of cognitive components (knowledge, metacognitive capacities, and self-reflection) (Gluck & Westrate, 2022)
- New study confirming that increased educational attainment has improved the cognitive functioning of recent cohorts of older adults (Turcotte & others, 2022)
- Coverage of a new study of older Mexican adults that indicated in addition to one's own education, a spouse's education was associated with better cognitive ability (Saenz & others, 2020)
- Inclusion of a recent study that revealed high blood pressure was associated with lower cognitive function in older adults (Naharci & Katipoglu, 2021)
- Discussion of a recent study that found the risk of cognitive decline was lower among older adults who engaged in either moderate-to-high intensity exercise or low-intensity exercise (Endeshaw & Goldstein, 2021)
- Coverage of a recent meta-analysis of a large number of studies that concluded virtually any exercise is better than no exercise for older adults' cognition and that a lower level of exercise is required to improve the cognitive activity of obese older adults than their non-obese counterparts (GallardoGomez & others, 2022).
- Inclusion of a recent study in which higher dietary fiber intake was associated with improvement in specific components of cognitive function in older adults (Prokopidis & others, 2022)
- Description of a recent study of more than 1,000 older adults (mean age = 79) who were followed for more than 10 years that showed cognitive decline accelerated considerably at 3.7 years on average before death (Wilson & others, 2020)
- Discussion of a recent meta-analysis in which physical activity significantly improved the cognitive function of sedentary older adults (Zhao & others, 2022)
- Inclusion of a large-scale study in India of more than 30,000 older adults that revealed those who engaged in frequent physical activity had better cognitive functioning (such as memory and executive function) than older adults who did not participate in physical activity (Kumar & others, 2022)
- Description of a recent study that discovered interactive physical-cognitive, game-based training was effective in reducing physiological fall risk and improving cognitive function in community-dwelling older adults (Phirom & others, 2020)
- Discussion of a research review indicating that several studies have found that strength and cognitive training improves cognition and function in older adults (Esmaeilzadeh & others, 2022)
- Coverage of a recent analysis that concluded lifelong bilingualism protects against cognitive decline and reduces the risk of developing Alzheimer disease (Liu & Wu, 2021)
- Updated data on labor force participation among older adults, including effects of the COVID-19 pandemic (Bureau of Labor Statistics, 2021)
- Update on the percentage of men and women age 65 and older who are working (U.S. Bureau of Labor Statistics, 2021)
- Coverage of a recent study of almost 350,000 50- to 75-year-olds that indicated non-Latino White men and women were more likely to be working than Black American men and women and Latinas (Moen & others, 2022)

Chapter 18 (continues)

- New data from a 2021 Gallup poll indicating that the average age of retirement in the United States was 62, the highest in 20 years (Gallup, 2021). However, the respondents reported that they expected to retire at 64, lower than in 2020 (66 years) and 2019 (65 years).
- Expanded content indicating that depression is often undiagnosed and undertreated in older adults because of the assumption that it is “normal” to be sad when you are old
- New commentary noting that older adult men, especially older adult Black American men, often underreport depression symptoms because of the stigma associated with it. And while older men have lower depression rates than older women, they have higher suicide rates, an indication of their undetected and undertreated depression.
- Coverage of a recent study that revealed the greater occurrence of depression in older adult women reflected having lower incomes, having one or more chronic illnesses, and living alone (Ferri & others, 2022)
- Description of a recent meta-analysis that concluded regular exercise can reduce depression in older adults (Bigarella & others, 2022)
- Inclusion of a recent Korean study of older adults that found being a woman, having three or more chronic conditions, and not owning their home were associated with a high level of depression (Lim & others, 2021)
- Discussion of a recent study of older adults in which elevated depressive symptoms were linked to physical inactivity, inadequate consumption of fruits and vegetables, and tobacco smoking (Werneck & others, 2021)
- Description of a recent study indicating that living alone and having subjective memory complaints were significant predictors of recent suicidal ideation in men, while depression was a significant predictor for both men and women (Kim & others, 2022)
- Coverage of a recent review in which depression and white matter (mainly axon and myelin sheath connectivity and transfer in the brain) impairment were described as two known risk factors for dementia that more strongly relate to negative outcomes for Black Americans than non-Latino Whites (Zahodne, 2021)
- Updated data on the incidence of Alzheimer disease, including age, gender, and ethnicity variations (Alzheimer’s Association, 2022)
- New content on the ApoE2 allele being the strongest genetic protective factor for Alzheimer disease (Serrano-Pozo, Das, & Hyman, 2021)
- Coverage of recent research indicating that ApoE4 and ApoE2 alleles are associated with methylation differences in the blood, especially in lipid and cholesterol processes (Walker & others, 2021)
- Description of Aduhelm, the first Alzheimer disease-modifying drug to be approved by the FDA in 17 years, with approval based on a PET scan that shows the drug reduces amyloid plaques in the brain (Woloshin & Kesselheim, 2022)
- New mention that the FDA approved Aduhelm in 2022 as the first drug for treatment of mild cognitive impairment related to Alzheimer disease (Cummings & others, 2022)
- New content that describes ongoing research revealing that a combination of drugs that target underlying causes of Alzheimer disease will be needed to reduce the disease, an idea is already reflected in the pipeline of new drugs being developed that target tau and other novel targets
- Description of a recent study of almost 3,000 cognitively normal older adults in which approximately one-fourth developed mild cognitive impairment six years later (Angevaere & others, 2022). In this study, presence of the ApoE4 gene and higher medical burden increased the risk of MCI, while more years of education, higher income, and more leisure time reduced the risk.
- New Connecting with Careers profile on Janet Hamada Kelley, Executive Director of the Alzheimer’s Association of San Diego
- Inclusion of a recent study of adults 65 and older that revealed the frequency of prayers at mealtime was associated with increased life satisfaction over time (Jung & Ellison, 2021)
- Coverage of a recent study of middle-aged and older adults that found infrequent religious service attendance was related to poorer cognitive functioning (Henderson & others, 2022). Greater religiosity was associated with better cognitive functioning among Black American women but lower cognitive functioning among non-Latino White men and women.

Chapter 19: Socioemotional Development in Late Adulthood

- Revisions based on comments by leading expert Deborah Carr
- Coverage of a recent meta-analysis of older adults with dementia living in nursing homes and other long-term care facilities revealing that reminiscence therapy increased their cognitive functioning and life satisfaction and decreased their depression and neuropsychiatric symptoms (Saragih & others, 2022)
- Inclusion of a recent study that found reminiscence therapy reduced the cognitive impairment, anxiety, and depression of post-stroke patients (Cheng & others, 2021)
- Coverage of a recent study in which reminiscence therapy was effective in increasing meaning in life, sense of coherence, and coping in older women living in a nursing home during the COVID-19 pandemic (Sales & others, 2022)

Chapter 19 (continues)

- Description of a recent Korean study of older adults that linked increased social activity to higher life satisfaction (Bae & Kim, 2021)
- Revised and updated coverage of Laura Carstensen's socioemotional selectivity theory (Carstensen, 2020, 2021)
- Inclusion of recent research indicating that even during the COVID-19 pandemic, which threatened older adults more than younger adults, older adults reported more positive and fewer negative emotions (Carstensen, Shavit, & Barnes, 2020)
- Discussion of a recent study in which young, middle-aged, and older adults were given the opportunity to earn money for themselves, loved ones, or charities by increasing their physical activity (measured with pedometers assessing daily step counts) (Raposo & others, 2021). No age differences occurred for the "self" or "loved one" conditions, but when earning money for a charity, older adults significantly increased their walking but younger adults did not.
- Description of a recent study in which selection, optimization, and compensation (SOC) strategies were linked to successful aging in Korean women (Han & Ko, 2021)
- Inclusion of a 14-year Japanese longitudinal study that indicated older adults who had higher levels of conscientiousness, openness, or extraversion were more likely to live longer (Iwasa & others, 2022)
- Coverage of recent research that revealed older adults higher in conscientiousness experienced less cognitive decline (Graham & others, 2021)
- Discussion of recent research in which higher conscientiousness was associated with a decreased risk of transitioning from no cognitive impairment to mild cognitive impairment (Yoneda & others, 2022). High neuroticism was linked to increased risk of transitioning from no cognitive impairment to mild cognitive impairment.
- Description of recent research that found older adults higher in conscientiousness were more likely to report that it is important to have a purposeful retirement, while those higher in neuroticism were less likely to think this is important (Hill & others, 2022)
- Coverage of a recent British study of older adults that revealed following one year of COVID-19 restrictions, high levels of self-control and self-efficacy were linked to engagement in greater physical activity and experiencing fewer depressive symptoms (Camp & others, 2022)
- Discussion of a recent research review that indicated ageism was linked to older adults' having lower psychological wellbeing (Kang & Kim, 2022). However, older adults with a high level of psychological wellbeing were found to be less negatively affected by ageism, especially those who were proud of their age group, experienced less negative emotions, were more optimistic about aging and their future, were more self-confident about their bodies, and were flexible in setting goals.
- Inclusion of a recent research review on the health of older adults in 45 countries that concluded ageism led to worse health outcomes, especially in less-developed countries where people were less educated (Chang & others, 2020)
- Discussion of a recent large-scale study of 20 countries in which the United Kingdom was characterized by the highest ageism while Sri Lanka had the lowest ageism (Ng & Lim-Soh, 2021)
- Description of a recent analysis that concluded those over 70 years of age are increasingly being viewed as helpless, frail, and unable to contribute to society (Ayalon & others, 2021), and that such overgeneralizations are harmful and contradict the heterogeneous nature of aging and the continuing contributions older adults make to society
- New content indicating that it is important to keep in mind that for many Black American older adults who are poor, their poverty emerged over their life course, especially for those who repeatedly experienced discrimination, racism, less educational access, and other obstacles
- New commentary about generational inequity and the importance of remembering that older adults give back as caregivers, volunteers, and so on rather than just "taking" resources from younger people New commentary that older adults' reliance on the Internet increased significantly during the COVID-19 pandemic because for many older adults it was their main way of communicating with others Updated data indicating that in 2021, 75 percent of U.S. adults 65 years of age and over were using the Internet, up from 59 percent in 2013 and 14 percent in 2000 (Statista Research Group, 2022) Updated data indicating that in 2021, 61 percent of U.S. adults 65 years of age and older were smartphone users, compared with 46 percent in 2018 and 30 percent in 2015 (Statista Research Group, 2022)
- Coverage of a recent study of older adults that revealed increased Internet use was associated with decreased loneliness (Yu, Wu, & Chi, 2021)
- Description of recent research in which remarried, cohabiting, divorced/separated, and widowed older adults were characterized by greater epigenetic aging than continuously married older adults (Yu, 2022)
- Inclusion of a recent study of married Mexican older adults that found experiencing more spousal support was associated with less loneliness while experiencing spousal strain was linked to more loneliness three years later (Saenz, 2021)

Chapter 19 (continues)

- Discussion of how some older adults live with their one and only spouse while increasing numbers of older adults are divorcing, remarrying, cohabiting, or living alone (Carr & Utz, 2020)
- Description of recent research on persons 50 years and older in which divorced women experienced a 45 percent decline in their standard of living (measured by an income-to-needs ratio) while men's standard of living declined only 21 percent (Lin & Brown, 2021). Remarriage improved the standard of living for women but not men (Lin & Brown, 2021).
- Coverage of a study of adults 65 years of age and older that indicated those who were divorced engaged in fewer conversations throughout the day than their married counterparts, although they did converse more with friends (Ng & others, 2021b)
- Inclusion of a recent Polish study of adults 65 years of age and older that found divorced women and men were more likely to commit suicide than their married counterparts (Smigielski & others, 2021)
- New content on the increasing percentage of older adults who are living apart together (LAT), which involves being in an intimate relationship but choosing to live separately for financial reasons, personal reasons, or both, with approximately 7 percent of older adults in the United States being in LAT relationships (Carr & Utz, 2020)
- Inclusion of a recent study that confirmed adult daughters are more supportive of their older parents than adult sons are, with more support given when older parents are in poor health (Herrera & Fernandez, 2022)
- Description of a study of older adults that revealed social support improved the mental health of those with chronic physical problems (Yang & D'Arcy 2021)
- Coverage of a recent study in which older adults with a greater diversity of social networks, regardless of perceived quality of social support, had better health-related quality of life (Rhee, Marottoli, & Monin, 2021)
- Inclusion of a recent study of older adults that indicated loneliness was associated with depressive symptoms (Lee & others, 2021)
- Discussion of a recent study in which volunteering was associated with increased self-esteem and autonomy (Kleiner & others, 2021)
- Inclusion of a recent Australian study that found older adults who engage in volunteering roles that (a) they consider not to be overwhelming, (b) fulfill their desire to volunteer for a cause about which they are genuinely concerned, and (c) involve activities they perceive to be meaningful produce the most favorable psychological outcomes such as life satisfaction (Jongenelis & others, 2022)
- New content indicating that volunteering may improve older adults' well-being or their well-being may improve the likelihood they will engage in volunteering
- Description of a recent study of lesbian and gay older adults that revealed those who volunteered had better physical health, more positive mental health, and less psychological distress than non-volunteers (Lyons & others, 2021)
- New Connecting Through Research feature highlighting research that revealed volunteering for 100 hours or more per year was related to having more positive and less negative self-perceptions of aging 4 years later, which in turn was linked to having fewer depressive symptoms (Huo & others, 2021)
- New discussion indicating that underrepresented ethnic groups' lack of access to health care means later detection of their illness/disease and thus higher mortality
- Coverage of a recent study of older adult Black Americans that found everyday discrimination was associated with higher levels of hopelessness and that religiosity helped to reduce their hopelessness (Mitchell & others, 2021)
- Discussion of a recent study of more than 40 million middle-aged and older adult Black American and non-Latino women and men in which workplace discrimination was highest for Black American women (25 percent) and lowest for non-Latino White men (11 percent) (Fekedulegn & others, 2019)
- Description of a recent study that indicated living in collectivist countries was associated with less age bias and greater feelings of warmth toward older adults compared with living in individualist countries (Ackerman & Chopik, 2021)

Chapter 20: Death, Dying, and Grieving

- New discussion of how wars, famines, and other tragic circumstances can significantly increase the occurrence of death
- New content on the COVID-19 pandemic and how it made Americans acutely aware of death, as more than 800,000 Americans had died of the virus between the spring of 2020 and the end of 2021
- Updated statistics from a 2020 Gallup poll indicating that 45 percent of Americans reported they have a living will, a slight increase from 40 percent in 2005 (Jones, 2020)
- Updated data noting that POLST (Physicians Orders for Life Sustaining Treatment) is now available in some form in all 50 states and Washington, D.C.
- Updated list of states that allow assisted suicide, with New Mexico added in 2021
- Updated Gallup poll that indicated 72 percent of U.S. adults said euthanasia should be legal, and 54 percent reported that physician-assisted suicide is morally acceptable (Brennan, 2018)

Chapter 20 (continues)

- Updated data indicating that in 2020, a national survey found that 83 percent of hospitals with 50 or more beds provided palliative care, up from 25 percent in 2000, 53 percent in 2008, and 67 percent in 2015 (Center to Advance Palliative Care, 2022)
- Inclusion of a recent study of cancer patients in palliative care that revealed they mainly received help for their pain (86 percent), lack of appetite (65 percent), and nausea (74 percent) (Bagcivan & others, 2022). They reported that their most frequent unmet needs were problems with concentration (70 percent), worrying (68 percent), difficulties with sex life (64 percent), limitations in work and daily activities (62 percent), and being depressed (59 percent).
- Discussion of a recent U.S. national study of older adults that revealed 39 percent died at home, 33 percent in a hospital, and 28 in a nursing or hospice facility (Lei & others, 2021)
- Coverage of a recent study in which support from friends and family was more beneficial to children and adolescents whose parent died of cancer than were support from schools and health-care personnel (Holm & others, 2022)
- Inclusion of a recent study that found family support, religion, meaning-making coping, exercising, and journal writing helped adolescents adjust better and cope more effectively following the death of a parent (Ludik & Greeff, 2022)
- Description of a recent German study that indicated difficulty accepting the loss was the most frequent symptom linked to prolonged grief disorder following a death (Rosner & others, 2021)
- Coverage of a recent study in which 13.4 percent of college students who experienced a significant death loss developed prolonged grief disorder (Glickman, 2021)
- Discussion of a recent study of almost 3,000 older adults that revealed prolonged grief disorder was linked to depressive symptoms, sleep disturbances, reduced life satisfaction, and lower quality of life. Predictors of prolonged grief disorder were being a woman; less time since the death; experiencing more losses; losing a child, partner, or sibling; and receiving less social support (Trembl & others, 2022). New Connecting Through Research feature on a study that found more grief severity by bereaved adults when a loss occurred during the COVID-19 pandemic than before it (Eisma & Tamminga, 2020) Inclusion of new content on the grief associated with death during the COVID-19 pandemic (Ramadas & Vijayakumar, 2021)
- Discussion of a recent study of adults who experienced an increased risk of suicide after a first-degree relative died suddenly (Hamdan & others, 2020)
- Coverage of a recent study that revealed experiencing the death of a child prior to midlife is associated with depressive symptoms among older adults (Jung & Lee, 2022)
- Updated data indicating that in 2019, 30 percent of U.S. women 65 years of age and older were widowed, compared with only 10 percent of men this age (Administration for Community Living, 2021) Description of a recent analysis that revealed a spouse's death affected women and men differently (Streeter, 2020), with women experiencing a 22 percent decline in income in the two years following the death of a spouse, while men's financial status stayed relatively stable but their emotional and mental health worsened following spousal death due to loneliness and depression
- Inclusion of a recent research review that found the following interventions improved widows' lives (Davidow & others, 2022): mindfulness techniques in a group format for improving emotional and life satisfaction outcomes; an individual, writing-based emotional expression therapy for short-term improvement in emotion and function; the drug nortriptyline for the treatment of bereavement-related major depressive disorder; an Internet-based cognitive behavior intervention for prolonged grief; and pharmacotherapy for cardiovascular problems during bereavement
- Updated data indicating that in the United States in 2021, 57.5 percent of deaths were followed by cremation, which is a significant increase from a cremation rate of 14 percent in 1985 and 27 percent in 2000 (Cremation Association of North America, 2022). In Canada in 2020, 74.8 percent of deaths were followed by cremation.