I. Chapter Overview

1. The Periods of Prenatal Development
   - The Germinal Period
   - The Embryonic Period
   - The Fetal Period
2. Maternal Conditions and Prenatal Development
   - Maternal Stress
   - Nutritional Influences
3. Teratogens: Environmental Sources of Birth Defects
   - Drugs
   - Infections and Other Health Conditions
4. Birth
   - The Stages of Labor
   - Cultural Variations in Childbirth
   - Childbirth in the United States
5. The Newborn’s Condition
   - Assessing the Baby’s Viability
   - Problems and Complications
   - Developmental Consequences
6. Beginning the Parent–Child Relationship
   - The Baby’s Appearance
   - Social Expectations

II. Key Concepts to Emphasize

III. Connections to Text: Central Issues and Theories

IV. Guide to the Supplements
V. Activities to Enhance Learning (homework, in-class activities, discussion questions)

VI. Handouts

I. Chapter Overview

This chapter is divided into six major sections covering the prenatal period of development through birth. The introductory section describes the theoretical and practical importance of prenatal development, as well as the relationship of prenatal development to later development.

Figures:
3.1 Changes in the size and form of the human body from 14 days to 15 weeks after conception

1. THE PERIODS OF PRENATAL DEVELOPMENT

Germinal Period

The germinal period begins at conception and lasts until the zygote enters the uterus and becomes implanted there, about 8 to 10 days later. Through repeated division, the organism grows from a single cell to hundreds of cells by the time it reaches the uterus.

Figures:
3.2 Development of the human embryo
3.3 A zygote after two cleavages

Embryonic Period

The embryonic period extends from implantation to the end of the 8th week. By the end of this period, all major organs have taken primitive shape and sexual differentiation has begun. This rapid growth is facilitated by the efficient way the placenta allows the exchange of nutrients and waste products between the mother and the embryo.

Figures:
3.4 The fetus in its protective environment
3.5 Cell differentiation

Tables:
3.1 Growth and development of the embryo

Fetal Period

The fetal period goes from the 9th week, with the beginning of ossification, until birth. The fetus grows dramatically in size, and the brain and all organ systems increase in complexity to the point where the baby can exist outside the mother. The fetus is subject to
environmental influences originating from outside as well as inside the mother. Basic sensory capacities (for sensing motion, light, sound) develop during this period, enabling fetal learning. By 15 weeks the fetus exhibits all movements observable at birth; fetal activity is crucial to proper neuronal development.

Figures:
3.6 The fetus at the beginning of the fetal period
3.7 The prenatal development of the brain
3.8 Baby listening to a recording

Tables:
3.2 Appearance of fetal movements in early pregnancy

Apply, Connect, Discuss
After reviewing the distinction between continuity and discontinuity presented in Chapter 1, discuss the ways in which prenatal development and activity are both continuous and discontinuous.

2. MATERNAL CONDITIONS AND PRENATAL DEVELOPMENT

- A mother’s negative attitudes toward a pregnancy or stress during pregnancy may be associated with problems such as low-birth-weight and certain longer-term developmental risks. The problems may stem from the mother’s elevated levels of the hormone cortisol during pregnancy.
- A mother’s nutrition is an important factor in fetal development. Pregnant women are advised to consume enough calories in a well-balanced diet and to increase intake of folic acid, calcium, and iron. Extreme maternal undernourishment and malnutrition are associated with low-birth-weight, prematurity, abnormalities, and death. Lesser degrees of poor nutrition also increase risk, although effects can be difficult to isolate. Maternal overnutrition is also associated with negative outcomes, including overweight in babies, who may be at later risk for health problems such as obesity and diabetes.

Figures:
3.9 Risk factors in industrialized and developing countries

Apply, Connect, Discuss
The famous Dutch famine of 1944 has provided a wealth of information for scientists interested in the effects of fetal malnourishment on subsequent development. Conduct some online research and explore some of the projects associated with the Dutch Famine Birth Cohort Study. What are some of the questions currently addressed by the study? What are some of the most recent findings?

3. TERATOGENS: ENVIRONMENTAL SOURCES OF BIRTH DEFECTS

- Teratogens (environmental agents that can cause deviations from normal fetal development) take many forms. Six general principles apply with all:
  - The susceptibility of the organism depends on its developmental stage.
  - A teragen's effects are likely to be specific to a particular organ.
  - Individual organisms vary in their susceptibility to teratogens.
The mother's physiological state influences susceptibility.
The greater the concentration of a teratogenic agent, the greater the risk.
Teratogens that have little or no effect on the mother can seriously affect the developing organism.

Figures:
3.10 Critical periods in human prenatal development
3.11 Picture of birth-deformed hand from exposure to petroleum

Among the common teratogens are drugs, including prescription drugs, caffeine, tobacco, alcohol, marijuana, cocaine, methamphetamine, heroin and methadone. Their effects vary considerably; heavy drinking, for example, is associated with fetal alcohol syndrome. Other teratogenic agents include infections, such as rubella and HIV, and radiation or pollution at high levels.

Figures:
3.12 Brain of child who has fetal alcohol syndrome
3.13 Women in the United States who report using drugs
3.14 Percentage of antiretrovirals for preventing mother-to-child transmissions

Tables:
3.3 Some maternal diseases and conditions that may affect prenatal development
3.4 Principles of prenatal development

Apply, Connect, Discuss
Visit the Web site of the Centers for Disease Control and Prevention. Explore their “One Test. Two Lives.” initiative. What is the goal of the initiative? How does the CDC hope to implement the initiative? What materials and tools have they developed to move the initiative forward?

4. BIRTH

Labor begins approximately 266 days after conception and proceeds through three overlapping stages, in which contractions cause the cervix to dilate, the baby is pushed through the birth canal and is delivered, and the afterbirth is delivered.

Figures:
3.15 Stages of labor

There are marked cultural variations in childbirth, so that a woman may give birth unassisted, be assisted by a midwife and/or others at home, or be assisted by a physician or midwife in a hospital. In the United States, concern about the possible adverse effects of pain medication on the newborn and about the overuse of medical interventions (including labor and cesarean sections, for example), has led to interest in alternatives, such as the use of midwives and birthing centers.

Boxes:
Cultural Traditions and Infant Care: From Spirit Village to the Land of Beng
In the field: Midwifery in the Inuit villages of northern Canada

• Birth is a stressful experience for the baby, but research suggests that a surge of stress hormones as the process begins protects the baby from the adverse conditions and prepares the baby to survive outside the womb.

Apply, Connect, Discuss

When it comes to prenatal care, labor, delivery, and newborn care, technologically advanced societies rely heavily on medical science. How would you characterize the culture of medical science (you may want to review the definition of culture in Chapter 2)? What are some of the costs and benefits of medical science for pregnant women and newborns?

5. THE NEWBORN’S CONDITION

• The Apgar Scale is used to assess the newborn's physical condition by rating heart rate, respiratory effort, muscle tone, reflex responsivity, and color. Babies with a low score require immediate medical attention. Other scales have been developed to assess behavioral aspects of the newborn's condition.

Tables:

3.5 The Apgar Scoring System

• Risks are associated with prematurity (birth before the 37th week) and low-birth-weight (below 5 pounds, 8 ounces [2500 grams]). The risks are especially great for premature infants who are small for their gestational age and have medical complications.

Figures:

3.16 Smallest known surviving baby
3.17 Care for premature infants

Apply, Connect, Discuss

Low-birth-weight is one of the leading causes of infant mortality. According to Dr. Alan Brann, a professor of pediatrics at Emory University, birth weight is an important indicator of a community's overall health status. In particular, Dr. Brann argues that low-birth-weight signals an unhealthy community. In the past five years, many southern states have seen a shocking rise in the number of infant deaths. Have birth weights and infant deaths in your community/state/province/nation changed in recent years? How does your community/state/province/nation compare to others on measures of infant birth weight and mortality? What community/state/province/national efforts are underway to increase birth weight and/or decrease infant death?

6. BEGINNING THE PARENT–CHILD RELATIONSHIP

• A newborn's appearance plays a significant role in the parents' response to the baby, with "babyness" evidently evoking caregiving behaviors.

• From birth, parents' expectations influenced by the culture, influence the child's environment in ways that shape the child's development.
Apply, Connect, Discuss
Provide some examples of how the relationship between the newborn’s characteristics and the care he or she receives is mediated by cultural beliefs and values (see Chapter 2).

II. Key Concepts to Emphasize
In the following section, key concepts to emphasize are discussed. These concepts are key aspects of development during the prenatal or birth stages, as well as concepts introduced here and then returned to in subsequent chapters.

1. THE PERIODS OF PRENATAL DEVELOPMENT
To begin this unit, instructors may wish to use short YouTube videos illustrating each process for reviewing concepts of meiosis and mitosis as presented in Chapter 2. The detail provided in the current chapter regarding mitotic reproduction of cells during the prenatal period and stem cells may assist students in understanding the basic processes of biological development that were presented in Chapter 2.

The early active learning of the fetus can surprise students who might think of the fetus as a mere passive recipient of nutrients from its mother. To support Piaget’s constructivist theory of active learning, it can be helpful to point out that the child begins learning even before he or she is born.

2. MATERNAL CONDITIONS AND PRENATAL DEVELOPMENT
The previous section on early learning demonstrates how the environment influences the developing infant. The environment also influences the child through its impact on the mother. This section emphasizes how maternal stress and nutrition impact the developing fetus. It ends with a discussion of the difficulty in conducting carefully controlled research studies on this topic, and this can be emphasized in discussion or group activity as will be described below. In particular, the Apply, Connect, Discuss activity in this section is a good way to emphasize this concept.

3. TERATOGENS: ENVIRONMENTAL SOURCES OF BIRTH DEFECTS
Teratogens are introduced in this section and provide an opportunity to discuss the outcomes from exposure to risk factors. Figure 3.10 presents the critical periods in human prenatal development and so provides an opportunity to discuss the varying effects of exposure to teratogens during the prenatal period. Instructors can note that different body parts and functions are effected depending on the time of exposure.

The discussion regarding the influences of teratogens on the developing fetus provides an opportunity to review the scientific method as presented in Chapter 1. In discussion or group activity, students can be asked how they would design a controlled, valid, reliable, and ethical study of teratogens in prenatal development.

Table 3.4 can also be used to emphasize the importance of the prenatal period of development. As the authors state, the prenatal period can be viewed as a model for all subsequent periods of development, so the principles presented in this table can help to preview information in future chapters.
4. **BIRTH**

Cultural variations in childbirth are described in this section. This is a good spot to emphasize the role of culture in development. The different cultural beliefs and practices elucidate how cultural influences affect how humans experience universal biological stages.

In this chapter, the positive and negative aspects of hospital births are presented. This topic can serve to spark a discussion on the unintended influence of cultural beliefs and values.

5. **THE NEWBORN’S CONDITION**

In the discussion of the newborn’s condition, the text states that while neonatal assessment scales are good for determining the need for medical intervention and for characterizing early development, they are less useful when it comes to predicting later intelligence or personality. Students can be asked to discuss why this is so, as this relates to the text’s continuity theme.

6. **BEGINNING THE PARENT–CHILD RELATIONSHIP**

The role of gender in development will be covered in future chapters of this text. Those discussions may be facilitated by discussing the ways in which gender influences development from the very start of life. One way to emphasize the role of social expectations is to have students attempt to confirm some of the empirical findings presented in the text. They can begin by asking people to describe a picture of a baby. They can randomly tell the person they are interviewing that the baby is a girl or a boy and then record the comments of the interviewees. Students can then share their findings. The activity can end with a discussion of students’ opinions regarding their results and what influence this has on development. This may be an individual or group activity (see Handout 3.10).

III. **Connections to Text: Central Issues and Theories**

This chapter provides various opportunities to draw connections to the key issues and theories presented in Chapter 1. These connections can be drawn in lectures, class discussions, or activities.

**CONTINUITY VS. DISCONTINUITY**

**Ethology and babyness**

The concept of “babyness,” or the characteristic features of newborns across species, provides an opportunity to return to the theme of continuity. Instructors can show profile pictures of heads of infants and adults from four species, such as a human, dog, bird, and rabbit. The common characteristics are an example of continuity across species—one of the concepts introduced in Chapter 1.

**Different stages of prenatal development**

The different stages of prenatal development are an excellent example of developmental discontinuity, as the developing organism goes through substantial qualitative changes with the unfolding of each new stage. Because the notions of qualitative and quantitative change can be challenging for students, it can be helpful to review those concepts in relation to prenatal development. It is especially appropriate to discuss them here as discontinuity between the prenatal stages is highlighted in the text.

**Maternal stress and unwanted children**

The text describes long-term negative outcomes for children who were not wanted at birth. This topic presents an opportunity to discuss continuity and discontinuity as it relates to long-term pre-
dictions of developmental outcomes. While the text clearly describes a correlation between being unwanted at birth and long-term negative outcomes, it might be helpful to discuss whether there is a direct cause-and-effect relationship between these factors or whether other factors associated with being unwanted may account for the relationship between these factors. This relates to the correlation/causation question introduced in Chapter 1 as well.

**NATURE VS. NURTURE**

**Maternal stress and unwanted children**

The research on maternal stress noted previously can also be used to review the influences of nature and nurture. The research suggests that hormonal changes in the mother caused by stress can negatively influence the developing fetus. It also suggests that unwanted status at birth can negatively influence the developing fetus. In discussion or group activities, students can debate whether they think the short- and long-term effects are due to nature (e.g., the hormonal changes caused by stress) or nurture (e.g., the quality of care the parent provides the child after birth). This debate can serve to support the text’s theme about the difficulty involved in sorting out the influences of nature and nurture.

**Early reactions to baby’s gender**

The text describes early reactions of parents to their baby’s gender. One question often examined in relation to gender is how much are gender differences related to nature and how much to nurture. The strong reactions to the gender of a fetus and newborn described in this chapter provide a unique opportunity to discuss the transactional influence of nature and nurture. In discussion or class activity, students can list different experiences that are provided to newborns based on their gender (e.g., toys provided, colors of rooms). After listing, the discussion can turn to opinions about how these different experiences might influence development and make it difficult to sort out the influence of nature and nurture on gender differences (see Handout 3.11).

**PLASTICITY**

The text describes a range of outcomes for premature infants. These outcomes provide an opportunity to discuss plasticity in terms of things that can be done to improve outcomes for premature infants. An example of a unique intervention for premature infants is provided in “The Secret Life of the Brain: Episode One.” The intervention depicted is to keep the premature infant in a carefully controlled, quiet, and dark environment, so the wiring of the brain that occurs late in the prenatal period will occur without overstressing the developing brain.

**INDIVIDUAL DIFFERENCES**

**Individual differences in the effects of exposure to teratogens**

In this chapter, the effects of exposure to teratogens are described. The principles of teratogenic effects include the principle that “individual organisms vary in their susceptibility to teratogens.” Results related to individual differences in reaction to thalidomide and alcohol are just some of what is discussed in this chapter. To further reinforce the theme of individual differences, students can be asked to review the entire section on teratogens and list all examples of individual differences in reaction to them. This discussion or activity can also reinforce the notion of resilience which was introduced in the supplemental reading by E. Werner.
Limited predictability from early individual differences on neonatal assessments

The text describes the limited predictability of neonatal assessments, especially when predicting intelligence and personality. To reinforce the theme of individual differences, students can discuss the reasons why these neonatal assessments may not predict “later intelligence and personality.” The instructor can lead the discussion in the direction of how changes in assessment tools across ages influence predictability and how mediating factors may influence the predictability as well.

Theories

Sociocultural theory supports the assumption that all three factors—biological, social, and cultural—play a role in development. Examples of this theory are evident during the discussions regarding nutritional practices, socioeconomic circumstances of mothers, and cultural variations in childbirth. The relationship between the baby’s appearance at birth and the mother’s response and behavior toward the newborn is discussed in terms of Modern Theory of Evolutionary Theory, specifically ethology.

IV. Guide to the Supplements

SUPPLEMENTAL READINGS

This chapter can be supported by multiple readings from the supplemental readings available for the text (Readings on the Development of Children, 5th Edition, by Mary Gauvain and Michael Cole). These readings can be used directly by the instructor to support a presentation of the material or may be assigned to students to further deepen their understanding of the material. The readings for this section of the text provide an introduction to some of the major theorists and themes featured in the text. The readings include the following:

- Of human bonding: Newborns prefer their mother’s voices, by Anthony DeCasper and William P. Fifer
- The interplay between genotypes and family relationships: Reframing concepts of development and prevention, by David Reiss
- Recall in infancy: A neurodevelopmental account, by Patricia J. Bauer
- Culture and early infancy among central African foragers and farmers, by Barry S. Hewlett, Michael E. Lamb, Donald Shannon, Birgit Levendecker, and Axel Scholmerich
- Temperament and the reactions to unfamiliarity, by Jerome Kagan
- Specificity and heterogeneity in children’s responses to profound institutional privation, by Michael L. Rutter, Jana M. Kreppner, and Thomas G. O’Connor

VIDEOS

Multiple video clips can be found to support a student’s understanding of the material in this chapter. The Tool Kit includes an excellent sampling of video clips and includes activities that can be completed outside of class and turned in for instructor review. The Tool Kit table of contents provides information on those video clips and activities. Other supplemental videos that can be used to support a discussion of information found in this chapter include the following:

- Topic: Discussion of Fetal Development. The prenatal development clip gives students a brief overview of fetal development which can be viewed at the beginning of the chapter discussion or at the end. There is also a clip of a sonogram of a fetus. For some students, this will be their first time
witnessing a live fetus. Instructors should point out the visual body parts telling students when these body parts start to develop.

At the website pbs.org, the video “Life’s Greatest Miracle” can be found. This is a compelling video and presents complex concepts in an understandable manner. Sections on cell fertilization and cell division can be shown while discussing Chapter 2. For Chapter 3, the sections showing the developing fetus week by week would be appropriate as would the section on child birth.

V. Activities to Enhance Learning (homework, in-class activities, discussion questions)

The preface introduced a variety of activities that an instructor can use to enhance learning. These include homework assignments, which a student can complete outside of class and then turn in for grading or review. The results of these homework activities can also be reviewed during a class session. The activities found on the Tool Kit lend themselves to review and discussion in class. Also, the Apply, Connect, Discuss sections of this chapter lend themselves well to in-class activities. A few examples of activities will be presented here that are specific for this chapter, but we also remind you to review the activities described in the preface for other activities that you can use to enhance the learning of the material in this chapter.

HOMEWORK

- Select one of the studies described in the text and review the original study. Summarize the hypothesis, methods, results, and conclusions of this study. Do you agree or disagree with the summary of the study as presented in the text? What is the basis for your position?
- Bono, the singer from the musical group U2, is interested in preventing the spread of AIDS in Africa. Research some of the information he has shared about this issue.
- Interview expectant parents or parents of newborns about their expectations for their infant. What influences do you see related to the child’s gender? Are these similar to the patterns described in the text?
- Visit a hospital and see how it addresses issues of “bonding” as described in this chapter.
- Contact a local medical referral agency, hospital, or medical group for names of midwives. Interview a midwife asking why he or she went into this line of work. How does this person’s report relate to what you read about variations in child birth?
- Contact a local obstetrician or a hospital and ask for information on prenatal care. How well does that information reflect the information on the effect of maternal conditions on the developing fetus as described in this chapter?
- Review the teratogen section. List all examples of inconclusive results on the impact of teratogens on prenatal development. Design an ethical study that would help sort out these inconclusive results. Describe a set of natural conditions that might occur to help us sort out these inconclusive results, such as the wartime famine conditions that showed the relationship between maternal nutrition and prenatal development.
- Talk with your parents about your prenatal period of development. Did they experience exposure to any teratogens? Did your mother experience nutritional difficulties? What
developmental outcomes, if any, do you see for your own course of development from these early experiences?

- Expectant mothers receive messages from parenting magazines, friends, relatives, and parenting experts regarding the importance of reading and talking to their fetus. Interview an expectant mother regarding her beliefs about what a fetus may be learning and ask her if she communicates with her fetus and how she does so.

- Interview a woman from a culture that differs from your own. Ask her about the typical birthing practices within her family and culture. What is the role of the father and extended family? Compare her responses to your own personal cultural expectations regarding birthing practices and family roles.

### IN-CLASS ACTIVITIES

- Ask students to talk with their parents, expectant parents, or parents of a newborn, and ask what foods they believe pregnant women should and should not eat. In pairs or small groups, ask students to share this information with classmates to see if they can uncover different cultural beliefs about maternal nutrition during the prenatal period. Ask students to describe the possible adaptive functions for such different beliefs.

- In pairs or small groups, ask students to review the chapter, and then list the main precautions they would take when they or their partner are pregnant to minimize risks for the developing child.

- Ask students to review the material presented on the effects of maternal attitudes and stress, nutrition, and teratogens during the prenatal period. In pairs or small groups, ask students to share the top three suggestions that they would give to a pregnant woman to minimize the risks to the developing fetus. Compile the information and hand it out to students for them to share with friends, family, and to keep as reminders for themselves.

- A “Jigsaw” with the environmental conditions and prenatal development section and the teratogens section would help students sort out the multiple details presented in these two sections of the text.

- To gain a deeper understanding of the numerous potential toxins and infections that fetuses are exposed to regularly, students can map out when exposure occurs and the effects during certain times in development using Figure 3.10. Even with exposure to numerous toxins, healthy babies continue to be born every day in a variety of societies and cultures. Instructors can use this visual representation to highlight why prenatal development is still one of the greatest miracles of life.

- After reviewing the effects of teratogens during prenatal development, ask students to predict how the meltdown of the Fukushima Dai-ichi nuclear plant in Japan might impact the health and development of a fetus and newborn infant.

### DISCUSSION QUESTIONS

- What is the developmental importance of the two kinds of variability noted in the early stages of prenatal development, heterochrony and heterogeneity?

- In what ways is developmental discontinuity a characteristic of the prenatal period of development?
• The study by DeCasper and Spence described infant reactions to readings of *The Cat in the Hat*. In terms of the scientific method introduced in Chapter 1, why is it important to test for both increases and decreases in infant sucking related to hearing a story?

• List examples of the active aspects of the prenatal period.

• How does the concept of epigenesis help us to understand how different groups of cells take on different forms from those preceding them?

• Why is it difficult to isolate the effects of poor nutrition on prenatal development?

• Why should conclusions concerning maternal and fetal nutrition be considered with caution?

• Why do you think that neonatal assessment scales are “less useful when it comes to predicting later intelligence or personality?”

• What are the possible reasons that the chances of giving birth to a premature infant vary by socioeconomic status?

• Why might the role of gender as it influences parental responses to newborns be considered disconcerting?

• What empirical support is there for the importance of early bonding between parents and their newborn?

• What do the authors mean by the following statement?: “The social and behavioral changes that occur at birth are no less pronounced than the biological ones. The newborn encounters other human beings directly for the first time, and the parents get their first glimpse of their child. From the moment of birth, infants and parents begin to construct a social relationship.”

**VI. Handouts**

The handouts and activity forms for this chapter are listed below:

3.1 Advance Organizer
3.2 Key Terms
3.3 Apply, Connect, Discuss: Continuity and Discontinuity in Prenatal Development
3.4 Apply, Connect, Discuss: Dutch Famine
3.5 Apply, Connect, Discuss: Centers for Disease Control and Prevention
3.6 Apply, Connect, Discuss: Culture of Medical Science
3.7 Apply, Connect, Discuss: Trends in Infant Birth Weight
3.8 Apply, Connect, Discuss: Newborn Characteristics and Received Care
3.9 Principles of the Prenatal Period of Development
3.10 Social Expectations for Boys and Girls
3.11 Gender Differences: Nature or Nurture?
## Handout 3.1

### Chapter outline

<table>
<thead>
<tr>
<th>1. The Periods of Prenatal Development</th>
<th>Key points and questions</th>
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<tr>
<td>The Germinal Period</td>
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<td>The Embryonic Period</td>
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| 2. Maternal Conditions and Prenatal Development |                          |
| Maternal Stress                              |                          |
| Nutritional Influences                       |                          |

| 3. Teratogens: Environmental Sources of Birth Defects |                          |
| Drugs                                                |                          |
| Infections and Other Health Conditions              |                          |

| 4. Birth |                          |
| The Stages of Labor                              |                          |
| Cultural Variations in Childbirth                |                          |
| Childbirth in the United States                  |                          |

| 5. The Newborn’s Condition |                          |
| Assessing the Baby’s Viability |                          |
| Problems and Complications |                          |
| Developmental Consequences |                          |

| 6. Beginning the Parent–Child Relationship |                          |
| The Baby’s Appearance |                          |
| Social Expectations |                          |

### Handout 3.2  Understanding the Key Terms

<table>
<thead>
<tr>
<th>Key terms</th>
<th>Define in your own words here</th>
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Handout 3.3

Apply, Connect, Discuss

After reviewing the distinction between continuity and discontinuity presented in Chapter 1, discuss the ways in which prenatal development and activity are both continuous and discontinuous.
The famous Dutch famine of 1944 has provided a wealth of information for scientists interested in the effects of fetal malnourishment on subsequent development. Conduct some online research and explore some of the projects associated with the Dutch Famine Birth Cohort Study. What are some of the questions currently addressed by the study? What are some of the most recent findings?
Visit the Web site of the Centers for Disease Control and Prevention. Explore their “One Test. Two Lives.” initiative. What is the goal of the initiative? How does the CDC hope to implement the initiative? What materials and tools have they developed to move the initiative forward?
Handout 3.6  

Apply, Connect, Discuss

When it comes to prenatal care, labor, delivery, and newborn care, technologically advanced societies rely heavily on medical science. How would you characterize the culture of medical science (you may want to review the definition of culture in Chapter 2)? What are some of the costs and benefits of medical science for pregnant women and newborns?
Handout 3.7

Apply, Connect, Discuss

Low-birth-weight is one of the leading causes of infant mortality. According to Dr. Alan Brann, a professor of pediatrics at Emory University, birth weight is an important indicator of a community’s overall health status. In particular, Dr. Brann argues that low-birth-weight signals an unhealthy community. In the past five years, many southern states have seen a shocking rise in the number of infant deaths. Have birth weights and infant deaths in your community/state/province/nation changed in recent years? How does your community/state/province/nation compare to others on measures of infant birth weight and mortality? What community/state/province/national efforts are underway to increase birth weight and/or decrease infant death?
Provide some examples of how the relationship between the newborn’s characteristics and the care he or she receives is mediated by cultural beliefs and values (See Chapter 2).
Handout 3.9  Principles of the Prenatal Period of Development

Six explanatory principles for the prenatal period of development are introduced in this chapter. The text says these principles explain why many developmental psychologists view the prenatal period as a model for all later periods of development. List examples of each of these principles in the prenatal period of development, and then add examples from other periods of development as the course progresses.

<table>
<thead>
<tr>
<th>Prenatal examples</th>
<th>Examples from other developmental periods</th>
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<tbody>
<tr>
<td>1. Sequence is fundamental.</td>
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<td>2. Timing is crucial to development.</td>
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<td>3. Development consists of a process of differentiation and integration.</td>
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<td>5. Development is characterized by changes both in the form of the organism and in the ways it interacts with its environment.</td>
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<td>6. Development is epigenetic.</td>
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Social Expectations for Boys and Girls

In this activity, you will attempt to confirm some of the empirical findings presented in the text. Begin by asking at least ten people to describe a picture of a baby. Conduct these interviews separately and at different times. Tell half the people that the baby is a boy and the other half that the baby is a girl. Record the comments of the interviewees below.

Terms used to describe “boy” baby

Terms used to describe “girl” baby

Be prepared to share your findings with the class and also to share your opinions on why differences were found (or not found) in the way boys and girls were described and what influence this has on development.
The text describes early reactions of parents to their baby's gender. One question often examined in relation to gender is how much gender differences relate to nature (biology) and to nurture (e.g., experiences). This activity will lead you to examine some of these gender differences and to share your opinions of how they influence development.

First, list as many differences as you can regarding experiences provided for newborns based on their gender (e.g., toys provided, color of room).

Second, what are your opinions about how these different experiences might influence development?

Third, what are your opinions about how these early differences make it difficult to sort out the influence of nature and nurture on gender differences?