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An English Course in Language and Speech Therapy and Audiology I

PREPARED BY

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CAPPADOCIA UNIVERSITY PRESS

AN ENGLISH COURSE IN LANGUAGE AND SPEECH THERAPY AND AUDIOLOGY I

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CAPPADOCIA UNIVERSITY
2026

Cappadocia University Press: 139
ISBN: 978-625-5463-05-0
DOI: 10.35250/kun/9786255463050
URL: https://hdl.handle.net/20.500.12695/4331

© October 2026

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Certificate Number: 43348

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Page Layout and Cover Design: Onur Eren
Visual Design: Büşra Başak Altun
Proofreading: Muratcan Bul
Unit Header Design: Esra Kaya

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This book was supported by Research Fund of the Cappadocia University. Project Number: KÜN.2024-BAGP-042

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Gültekin, A., Serçe, E., Köksal, K. (Prepared by). (2026). *An English Course in Language and Speech Therapy and Audiology I*. Nevşehir: Cappadocia University Press.
133 p.
ISBN: 978-625-5463-05-0
DOI: 10.35250/kun/9786255463050
URL: https://hdl.handle.net/20.500.12695/4331
Keywords: Language and Speech Therapy, Audiology, Anatomy, Auditory System, Genetic

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SMART VOCABULARY
Use the commonly used anatomical terms: *dorsal, inferior, lateral, medial, posterior, proximal, superficial, superior, ventral, ventral, dorsal*

General Anatomical Terms and Anatomical Position

Early anatomists named structures based on what **they** (1) resembled. As an example, a structure deep within the brain has a curly shape that, upon discovery, was thought to resemble a seahorse. Thus, the name for this structure originated in the Greek word for that animal: Hippos, "horse." It also found in hippotherapy, which makes use of the rhythmic movements of the horse. Terms of Orientation Used as a reference to describe various body parts relative to one another, the standard posture when in the anatomic position is with your full body standing straight, with the face directed forward, the arms hanging down at your sides with your palms facing forward, fingers pointing straight down, and the Knees facing forward with the feet slightly apart and pointed forward.

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Just as the directional terms north, east, south, and west serve as a reference on a globe, the terms listed in the following table are commonly used to orient to a specific area of the body. Perhaps the most commonly used terms are superior, which means "toward the head," and **These terms (2)** tell you the position of a point of interest in the body relative to some other body part. When something is superior, it is in a position higher than another structure; when inferior, it is below in order; when anterior, it is in front, and when posterior, it is behind or in back of another structure.

A. Answer the following questions.

1. What inspired the naming of the hippocampus?
2. Describe the anatomic position.
3. What are the commonly used directional terms mentioned in the passage?
4. What does the term "superior" indicate in anatomical orientation?
5. How is the term "anterior" defined?

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Other commonly used directional terms include dorsal, ventral, rostral, caudal, medial, lateral, proximal, distal, superficial, and deep. Dorsal and ventral refer to the back and ventral refers to the anterior surface (toward the belly). Rostral means toward the nose, while caudal indicates toward the tail. (A speaker's platform is called a rostrum after the ship's nose, or rostrum.) Similarly, shells were also decorated with the rams from the bow ends of captured warships.) The term superficial indicates toward the surface, while deep references away from a surface. Putting it into practice, you could say that the heart is deep to the rib cage but that the skin is superficial to your bones. Finally, medial means toward the midline, and lateral are used to describe the position of a structure relative to the central part of the body. When something is proximal to another structure, it is nearer to the trunk (the shoulder is proximal to the elbow). Conversely, distal indicates that something is further from the trunk (the elbow is distal to the shoulder). The term medial means toward the midline. For example, the ulna is medial to the radius, whereas lateral is used to indicate toward the outside. For example, the radius is lateral to the ulnar and the tibia is lateral to the fibula. You just learned that lateral (the root word is both terms) means side. Considering that spin means same, ipsilateral means "on the same side." For example, the arm and left leg are ipsilateral to one another; they are on the same side of the body. The prefix contra means against or in opposition to. When something is contralateral, it is on the opposite side. For example, your right leg is contralateral to your left leg. Your ears are on contralateral sides of your head. Combining forms **(3)** ideas and putting them into practice, we might say that the right arm is ipsilateral to the right leg and contralateral to the left arm.

B. Answer the following questions.

1. What does the term "dorsal" refer to?
2. How is "rostral" defined in the passage?
3. What is meant by "superficial" in anatomical terms?
4. Explain the term "proximal" with an example from the text.
5. What do "ipsilateral" and "contralateral" mean?

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Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) The hippocampus is named because its shape resembles a seahorse.
2. ( ) In the anatomic position, the palms face backward.
3. ( ) Superior means below or under another structure.
4. ( ) Dorsal refers to the anterior surface of the body.
5. ( ) The term caudal indicates toward the tail.
6. ( ) The heart is superficial to the rib cage.
7. ( ) Proximal means nearer to the trunk of the body.
8. ( ) Lateral means toward the middle of the body.
9. ( ) Ipsilateral means on the same side.
10. ( ) Your ears are ipsilateral to each other.

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B. Ask questions for the given answers.

1. Question: _____?
Answer: Early anatomists named structures based on what they resembled.

2. Question: _____?
Answer: The anatomic position is with the body standing straight, face directed forward, arms at the sides, and palms facing forward.

3. Question: _____?
Answer: Superior means above or higher than another structure.

4. Question: _____?
Answer: Rostral means toward the nose.

5. Question: _____?
Answer: The right arm is ipsilateral to the right leg.

C. Read the provided sentences from the text and identify what the words in bold refer to.

1. **they (1)** refers to_____.
2. **(2)** refers to_____.
3. **these terms (2)** refers to_____.
4. **they (4)** refers to_____.
5. **these (3)** refers to_____.

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Vocabulary Study

A. Match each word from the text with its correct meaning.

1. Hippocampus	a) Toward the posterior surface.
2. Anatomical position	b) Toward the nose.
3. Superior	c) Toward the anterior surface.
4. Inferior	d) In front of another structure.
5. Anterior	e) Behind or in back of another structure.
6. Posterior	f) The position of the body when standing straight with face forward, arms at sides, and palms facing forward.
7. Dorsal	g) Below or under another structure.
8. Ventral	h) Above or higher than another structure.
9. Rostral	i) Toward the tail.
10. Caudal	j) A structure in the brain named for its resemblance to a seahorse.

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B. Match each word from the text with its opposite.

1. Superior	a) Contralateral
2. Proximal	b) Distal
3. Medial	c) Deep
4. Superficial	d) Lateral
5. Ipsilateral	e) Inferior

Language Study: Relative Clauses

Relative clauses provide additional information about a noun without starting a new sentence. They often begin with relative pronouns such as "that," "which," "who," "whom," and "whose."

Use "that" or "which" (for things), "who" (for people).

Examples From the Text

1. **Defining Relative Clauses:** These clauses are essential to the meaning of the sentence. They provide necessary information about the noun.
   - "A structure deep within the brain has a curly shape that, upon discovery, was thought to resemble a seahorse."

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2. **Non-defining Relative Clauses:** These clauses provide extra information that can be omitted without changing the meaning of the sentence. They are usually separated by commas.
   - "A speaker's platform is called a rostrum after the Rostra in the ancient Roman Forum, which was decorated with the rams from the bow ends of captured warships."

Use "which" for things, "who" for people. Always use commas to separate the clause from the rest of the sentence.

A. Fill in the blanks with appropriate relative pronouns (that, which, who, whom).

1. A structure deep within the brain has a curly shape _____ was thought to resemble a seahorse.
2. The standard posture _____ is used in the anatomic position involves anterior structures.
3. Anatomists _____ discover new structures, often name them based on their shape.
4. The ancient Roman Forum, _____ was a place for public speeches, had a structure called the Rostra.

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B. Combine the sentences using relative clauses.

1. The hippocampus is a brain structure. It resembles a seahorse.

_____

2. Anatomical terms help describe body positions. They are called directional terms.

_____

3. A rostrum is a platform. Public speeches were given there in ancient Rome.

_____

4. The shoulder is a joint. Its position is proximal to the elbow.

_____

5. A laryngectomee is a person. This person has had their larynx surgically removed.

_____

Language Study: Prepositions

Prepositions are words that show the relationship between a noun (or pronoun) and other elements in a sentence. They can indicate various relationships such as location, direction, time, and more.

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Examples From the Text

1. **Prepositions of Location:** These prepositions indicate the position of something.
   - "A structure deep within the brain has a curly shape..."
   - "The standard posture when in the anatomic position..."
   - "The face directed forward..."
   - "The arms hanging down at your sides..."
   - "Your skin is superficial to your bones."
2. **Prepositions of Direction:** These prepositions show movement or direction.
   - "A structure that, upon discovery, was thought to resemble a seahorse..."
   - "Rostral means toward the nose..."
3. **Prepositions of Time:** These prepositions indicate time.
   - "Terms of Orientation Used as a reference to describe various body parts relative to one another..."
4. **Prepositions in Idiomatic Expressions:** These are fixed phrases with prepositions.
   - "Combining these ideas and putting them into practice..."

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A. Fill in the blanks with the prepositions below.

in on at forward

1. Early anatomists named structures based _____ what they resembled.
2. The standard position when _____ the anatomic position is with your full body standing straight.
3. The arms hanging down _____ your sides with your palms facing forward.
4. Just as the directional terms north, east, south, and west serve as a reference _____ a globe...
   - Explanation: _____ it compares.
5. The face directed _____ the arms hanging down at your sides.

B. Choose the correct preposition.

1. The term "caudal" indicates **toward/within** the tail.
2. The heart is deep **within/into** the rib cage.
3. The lungs are lateral **at/to** the heart.
4. The standard posture is used to orient **at/to** a specific area of the body.
5. Dorsal refers **to/at** the posterior surface.

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TARGET VOCABULARY

balance, conductive hearing loss, ear canal, eardrum, eustachian tube, disorder, hearing impairment, inflammation, inner ear, middle ear, otitis media, pressure, rupture, temporal bone, vacuum



IMAGE MADE WITH GOOGLE AI

Otitis Media

Otitis media (ear infection) is acute **inflammation** or chronic fluid in the middle ear that can lead to conductive hearing impairment and balance problems and has been linked to speech and language delays in young children. The prefix oto- refers to the ear, the suffix -itis refers to inflammation, and media refers to the "middle of things." The peripheral hearing apparatus resides deep within the petrous portion of the temporal bone and includes the ear canal, the middle ear (air-filled space with three small **transmission** bones), and the inner ear (receptor organ for hearing). With otitis media, the middle ear is subjected to abnormal negative pressure (vacuum) and/or fluid buildup (infected or not). Otitis media is typically secondary to a temporary or permanent **malfunction** of the Eustachian tube. The middle ear space is lined with tissues that can **absorb** gases. When gases are absorbed, the middle ear space develops negative pressure.

Whenever we swallow or yawn, the eustachian tube opens and a small amount of air is delivered from the back of the throat to the middle ear space, reestablishing **equilibrium** of air pressure on both sides of the tympanic membrane (eardrum). The eustachian tube is angled in a lateral-posterior to medial-anterior manner from the middle ear to the back of the throat. With otitis media, conductive hearing loss can occur. In severe cases, the significant negative pressure can pull fluid back out of the surrounding tissues, and overaccumulation of fluid in the middle ear can cause the tympanic membrane to rupture.

ROUSSEAU BERNARD -BRANSKI RYAN C., ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING, NEW YORK, THEME PUBLISHERS, 2018, P.91

A. Answer the following questions.

1. What does the Eustachian tube do when we swallow or yawn?
2. Describe the anatomical components of the peripheral hearing apparatus as outlined in the passage.
3. What problems can otitis media cause in children?
4. How does the passage define the terms "oto-", "-itis", and "media"?

Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) Otitis media is an inflammation in the inner ear.
2. ( ) The Eustachian tube helps balance the air pressure in the middle ear.
3. ( ) Swallowing or yawning can help open the Eustachian tube.
4. ( ) The tympanic membrane is another name for the eardrum.
5. ( ) Otitis media can lead to speech and language delays in young children.

B. Ask questions for the given answers.

1. Question: _____?

Answer: Acute inflammation or chronic fluid in the middle ear that can lead to conductive hearing impairment and balance problems.

2. Question: _____?

Answer: The prefix oto- refers to the ear.

3. Question: _____?

Answer: The peripheral hearing apparatus includes the ear canal, the middle ear, and the inner ear.

4. Question: _____?

Answer: A malfunction of the Eustachian tube.

5. Question: _____?

Answer: Swallowing or yawning opens the Eustachian tube, delivering air to the middle ear space.

Vocabulary Study

A. Find the words in bold in the text that match the description.

1. A condition in which a part of the body becomes red, swollen, and painful:

_____

2. A state of balance between different forces or elements:

_____

3. To take in or soak up a substance, such as a gas or liquid:

_____

4. A failure to function in a normal or satisfactory manner:

_____

5. The act of passing something from one place to another:

_____

B. Match the words with their opposites.

1. typically	a) permanent
2. fluid	b) push
3. significant	c) seldom
4. temporary	d) unimportant
5. pull	e) solid

Language Study: Passive Voice

In English, we use the passive voice when we want to focus on the action or the receiver of the action, rather than the person or thing doing it.

Structure: Subject + form of "be" + past participle (V3)

Examples:

- Active: The chef cooks the meal.
- Passive: The meal **is cooked** by the chef.

- Active: They cleaned the room.
- Passive: The room **was cleaned** (by them).

We often use the passive when:

- The door is unknown: The window was broken.
- The door is not important: English is spoken in many countries.
- We want to sound more formal or objective: The report was written last week.

Tense Changes (Examples):

- Present Simple: The car **is washed.**
- Past Simple: The car **was washed.**
- Present Perfect: The car **has been washed.**

A. Rewrite the sentences in active voice according to the example from the text.

Example from the text: A small amount of air is delivered from the back of the throat to the middle ear space

Rewritten: The middle ear space receives a small amount of air from the back of the throat.

1. With otitis media, the middle ear is subjected to abnormal negative pressure (vacuum) and/or fluid buildup (infected or not).

_____

2. The middle ear space is lined with tissues that can absorb gases.

_____

3. When gases are absorbed, the middle ear space develops negative pressure.

_____

5 (30) TARGET VOCABULARY

acquired, aspiration, complication, congenital, digestive system, esophagus, fistula, laryngectomy, prosthesis, respiratory system, surgical procedure, trachea, tracheoesophageal fistula (tef), tracheoesophageal puncture (tep)

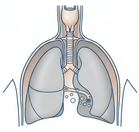


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Tracheoesophageal Fistulas

Tracheoesophageal fistulas (TEFs) are openings that connect the trachea to the esophagus. In healthy individuals, there is no connection between **these (1)** passageways. Swallowed material stays in the esophagus (food tube) or **its (2)** way to the digestive system, while respiration occurs via the trachea (wind- pipe). The word fistula, from a Latin word for pipe, means an abnormal opening. TEFs provide the opportunity for swallowed material to enter the respiratory system, resulting in aspiration and potentially life-threatening complications. Air may also enter the esophagus via a TEF, although the resulting complications are not generally as serious.

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TEFs can be congenital (present from birth) or acquired. For example, tracheostomy tubes that put pressure on the posterior wall of the trachea can cause the tissue to wear away, resulting in a hole or passageway between the two structures. TEFs can also develop as a complication of surgical procedures, such as laryngectomy. Congenital TEF may also occur with esophageal atresia (EA), where the esophagus does not properly connect to the stomach. Both TEF (whether congenital or acquired) and EA have life- threatening implications and are treated surgically.

Interestingly, a connection between the esophagus and trachea can be useful for communication in certain situations. A laryngectomee (i.e., an individual whose larynx has been removed surgically) may have a tracheo- esophageal puncture (TEP), which is a surgically created passageway between the esophagus and trachea. Using a prosthesis inserted into the TEP, the laryngectomee can produce sound by shunting air from the lungs to the esophagus. The vibratory source for speech becomes the esophageal tissue rather than the vocal folds, which were removed with the larynx. Aspiration of swallowed material that "leaks" through the TEP remains a concern for individuals using TEP for speech; candidates for **this (3)** method of communication are carefully selected and closely followed by the healthcare team.

ROUSSEAU BERNARD -BRAWSKI RYAN C., ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING, NEW YORK, THEME PUBLISHERS, 2018, P.72

A. Answer the following questions.

1. What are the potential complications of TEFs?
2. Can TEFs be both congenital and acquired? Explain how.
3. How can tracheostomy tubes cause TEFs.
4. What is the relationship between esophageal atresia (EA) and TEFs?
5. How does a laryngectomee produce sound using a TEP?

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Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) TEFs connect the trachea to the esophagus.
2. ( ) In healthy individuals, there is a normal connection between the trachea and esophagus.
3. ( ) Swallowed material can enter the respiratory system through a TEF, potentially causing aspiration.
4. ( ) Both congenital and acquired TEFs are treated surgically.
5. ( ) TEFs are life-threatening and always require surgical intervention.

B. Ask questions for the given answers.

1. Question: _____?

Answer: Esophageal atresia (EA) is a condition where the esophagus does not properly connect to the stomach.

2. Question: _____?

Answer: A connection between the esophagus and trachea can be useful for communication in certain situations.

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3. Question: _____?

Answer: Candidates for TEP communication are carefully selected and closely followed by the healthcare team.

4. Question: _____?

Answer: A tracheoesophageal puncture (TEP) is a surgically created passageway between the esophagus and trachea.

Vocabulary Study

A. Write the adjective versions of the adverbs in the table below.

Adverb	Adjective
potentially	
generally	
properly	
surgically	
interestingly	
carefully	

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B. Fill in the blanks with the adjectives above.

1. The doctor discussed the _____ complications of TEFs with the patient's family.
2. It is essential to take _____ precautions when managing TEFs to prevent further complications.
3. The team conducted a _____ examination to determine the cause of the patient's TEF.
4. A _____ procedure was performed to repair the TEF and restore normal function.
5. One _____ aspect of TEP is its use in restoring speech for laryngectomees.
6. The patient's recovery after the _____ removal of the TEF was monitored closely by the healthcare team.

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Language Study: Possessive Structure

In English, possessive structures are used to show that something belongs to someone or something, or to express a close relationship between two nouns. There are two main ways to form possessives:

1. Using 's (apostrophe + s)

This is common for people, animals, and sometimes organizations or time expressions.

- Ali's book → the book that belongs to Ali
- The trachea's connection → the connection of the trachea

2. Using "of + noun"

This form is more common with things, abstract nouns, or longer noun phrases.

- The roof of the building
- The complications of the TEF

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A. Identify the possessive structure in each sentence and then rewrite the sentence to highlight the possessive relationship.

0. The TEF's complications can be severe.

Rewritten: The middle ear space receives a small amount of air from the back of the throat.

1. The posterior wall of the trachea is affected by the pressure of tracheostomy tubes.

_____

2. The implications of EA can be life-threatening

_____

3. The source of vibratory speech for individuals using a TEP is the esophageal tissue.

_____

4. The aspiration of swallowed material is a concern for individuals using TEP for speech.

_____

5. The trachea's connection to the esophagus can cause serious health issues.

_____

TARGET VOCABULARY

audiologist, birth defect, cleft lip, cleft palate, complication, craniofacial anomaly, feeding, fetal development, hearing aid, hearing loss, oral cavity, palate, speech-language pathologist, surgical treatment, swallowing

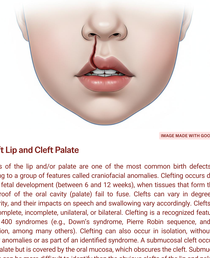


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Cleft Lip and Cleft Palate

Clefts of the lip and/or palate are one of the most common birth defects and belong to a group of features called craniofacial anomalies. Clefting occurs during early fetal development (between 6 and 12 weeks), when tissues that form the lip and roof of the oral cavity (palate) fail to fuse. Clefts can vary in degree and severity, and their impacts on speech and swallowing vary accordingly. Clefts may be complete, incomplete, unilateral, or bilateral. Clefting is a recognized feature of over 400 syndromes (e.g., Down's syndrome, Pierre Robin sequence, and 22q deletion, among many others). Clefting can also occur in isolation, without any other anomalies or as part of an identified syndrome. A submucosal cleft occurs in the palate but is covered by the oral mucosa, which obscures the cleft. Submucosal clefts can be more difficult to identify than the obvious clefts of the lip and palate.

Clefts are treated surgically, often during the first weeks of life, with ongoing management usually continuing for years afterward. Speech- language pathologists and audiologists are part of a multidisciplinary team involved in the treatment of patients with clefting of the lip and/or palate. The craniofacial team also includes surgeons, dentists, pediatricians, dietitians, and social workers.

Clefts of the lip and palate can impact an infant's ability to latch on to a nipple and to gener- ate sufficient intraoral pressure for feeding. Later in development, speech sound acquisition and language development may be delayed. Speech- language pathologists work with the infant and family to facilitate feeding, speech, and language development. Frequent ear infections (chronic otitis media) and the resulting hearing loss are often a complication of clefting. When hearing loss is present, audiologists and ear, nose, and throat physicians work together with the cleft and craniofacial team to recommend and fit an appropriate hearing aid or implantable devices.

ROUSSEAU BERNARD. BRANDSI RYAN C., ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING, NEW YORK, THIEME PUBLISHERS, 2018, P.25

A. Answer the following questions.

1. What are clefts of the lip and/or palate, and when do they occur during fetal development?
2. How do the degrees and severity of clefts impact speech and swallowing?
3. Who are the members of the multidisciplinary team involved in treating patients with clefting of the lip and/or palate?
4. What complications can arise from clefting, and how are they addressed by the healthcare team?
5. What are the syndromes associated with clefting?

Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) Clefts of the lip and/or palate occur during late fetal development, specifically between 20 and 24 weeks.
2. ( ) Frequent ear infections and resulting hearing loss are common complications of clefting.
3. ( ) The craniofacial team includes speech-language pathologists and audiologists among other specialists.
4. ( ) Clefting can only occur as part of an identified syndrome and not in isolation.
5. ( ) Submucosal clefts are easier to identify than obvious clefts of the lip and palate.

B. Ask questions for the given answers.

1. Question: _____?

Answer: Clefting is a recognized feature of over 400 syndromes.

2. Question: _____?

Answer: Speech-language pathologists work with infants and families to facilitate feeding, speech, and language development.

3. Question: _____?

Answer: Submucosal clefts occur in the palate but are covered by the oral mucosa, which obscures the cleft, making them more difficult to identify compared to obvious clefts of the lip and palate.

4. Question: _____?

Answer: Clefts can lead to delayed speech sound acquisition and language development as they can affect the proper formation of sounds and speech clarity.

5. Question: _____?

Answer: Early intervention is critical because it allows for timely surgical correction and ongoing management to minimize developmental delays in speech, language, and feeding abilities.

Vocabulary Study

A. Match the words with their synonyms.

1. common	a) existing
2. ongoing	b) to suggest
3. present	c) to diagnose
4. to recommend	d) current
5. to identify	e) prevailing

B. Fill in the table below.

Noun	Verb	Adjective	Adverb
	develop		
treatment			X
		impactful	X
			variably

C. Fill in the blanks with the appropriate form of the words given in parentheses.

1. The _____ (develop) of the cleft occurs during early fetal _____ (develop).
2. Clefts can have a significant _____ (impact) on an infant's ability to feed, often resulting in _____ (impact) complications.
3. The degree of cleft _____ (vary) from case to case, with some being more _____ (vary) than others.
4. Surgical _____ (treat) is necessary for clefts, and many cases are _____ (treat) during the first weeks of life.

Language Study: Superlative & Comparative

Comparative

A comparative is a form of an adjective or adverb used to compare two things. It typically ends in "-er" for shorter words (e.g., "bigger," "smaller") or uses "more" or "less" for longer words (e.g., "more interesting," "less expensive"). "Than" introduces the second element in the comparison, showing what is being compared to the first element

Superlative

A superlative is a form of an adjective or adverb used to indicate the extreme or highest degree of a quality among three or more things. It typically ends in "-est" for shorter words (e.g., "biggest," "smallest") or uses "most" or "least" for longer words (e.g., "most interesting," "least expensive").

A. Fill in the blanks with the appropriate superlative or comparative form of the adjective provided in parentheses.

Example: Submucosal clefts can be **more difficult** to identify **than** the obvious clefts of the lip and palate.

1. The lungs are _____ (large) than the heart in size.
2. Among all the speech disorders, apraxia is considered one of the _____ (complex).
3. The left hemisphere is usually _____ (active) in language processing than the right.
4. Swallowing becomes _____ (difficult) after certain types of surgery.
5. The cochlea is one of the _____ (sensitive) structures in the auditory system.

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TARGET VOCABULARY

auditory system, biological organization, cellular process, central nervous system, epithelial tissue, evidence-based, framework, functional change, oral cavity, pathophysiology, peripheral nervous system, structural change, survival, vestibular system, well-being



Cells



Tissue



Organ

IMAGE MADE WITH GOOGLE AI

Composition of the Body: Cells, Tissues, Organs

The human body has a complex hierarchical organization. This hierarchy is a framework for understanding human anatomy and physiology. Cells are the basic units of life and have remarkable diversity in terms of structure and function. Unique types of cells are organized into collective entities called tissues. The four main tissue types of the human body are epithelial, connective, nervous, and muscle tissue. **Multiple** tissue types form organs and groups of organs, called organ systems. These systems work in concert to fulfill all functions necessary for our existence, including processes essential for speech, language, **swallowing**, hearing, and balance. The purpose of this chapter is to provide the basic understanding of the levels of organization of the human body necessary for speech, language, swallowing, hearing, and balance.

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Specifically, the chapter provides an **overview** of cell structure and reviews the cellular processes essential to survival, discusses how cells form the specialized tissues of the body and the functions of these tissues, explains how tissues are further organized into organs and organ systems, and relates these concepts to **disorders** managed by speech-language pathologists and audiologists.

Disorders of speech, language, swallowing, hearing, and balance are often the consequence of structural and/or functional changes within the various cells, tissues, and organ systems of the human body. An understanding of the biological organization of structures of the human body, including the oral and nasal cavities, larynx, auditory and vestibular systems, and the central and peripheral nervous systems, is necessary to understand the **etiology** of speech, language, swallowing, hearing, and balance disorders. Speech-language pathologists and audiologists use information about the human body to understand the pathophysiology of disorders and to make informed, evidence-based treatment decisions.

ROUSSEAU BERNARD- BRANSKI RYAN C., ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING, NEW YORK, THEME PUBLISHERS, 2018, P.31

A. Answer the following questions.

1. What are the four main tissue types mentioned in the text?
2. Why is understanding the human body's organization important for speech-language pathologists and audiologists?
3. What is the significance of tissue organization in the human body?
4. How do cells contribute to the diversity of functions in the human body, as described in the text?
5. What is the hierarchical organization of the human body from basic units to complex systems?

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Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) Organs are composed of multiple tissue types, each with specialized functions.
2. ( ) The four main tissue types of the human body are epithelial, connective, nervous, and skeletal tissue.
3. ( ) Speech-language pathologists and audiologists do not consider the biological organization of the human body in diagnosing and treating disorders.
4. ( ) Disorders affecting speech, language, swallowing, hearing, and balance are always caused by changes in organ systems only.
5. ( ) Tissues are organized into organs, which then work independently without coordination with other organ systems in the human body.

B. Ask questions for the given answers.

1. Question: _____?

Answer: An understanding of the biological organization of structures of the human body.

2. Question: _____?

Answer: The oral and nasal cavities, larynx, auditory and vestibular systems, and the central and peripheral nervous systems.

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3. Question: _____?

Answer: Processes essential for speech, language, swallowing, hearing, and balance.

4. Question: _____?

Answer: Cells are organized into tissues, which then form organs and organ systems.

5. Question: _____?

Answer: The framework for understanding human anatomy and physiology.

Vocabulary Study

A. Find the words in bold in the text that match the description.

1. the study of the causes of diseases:

_____

2. to take through the mouth and esophagus into the stomach:

_____

3. a general outline of a subject or situation:

_____

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4. an abnormal physical or mental condition:

_____

5. consisting of, including, or involving more than one:

_____

B. Write the meaning of each word from the text.

1. **Complex** (line 1) _____
2. **Unique** (line 3) _____
3. **Necessary** (line 9) _____
4. **Various** (line 15) _____

C. Write the antonyms of the words in exercise B.

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Language Study: Gerund

Gerund

A gerund is a verb form that ends in -ing and functions as a noun in a sentence. It is derived from a verb but is used as a noun, allowing it to take on roles like a subject, object.

- "An understanding of the biological organization of structures of the human body, including the oral and nasal cavities, larynx, auditory and vestibular systems, and the central and peripheral nervous systems, is necessary"

A. Rewrite the sentences below using gerunds according to the given prompts.

1. He studies the structure of human organs. (Gerund as subject)

_____

2. We need to analyze the results of the tests. (Gerund as object)

_____

3. She explained the importance of good nutrition. (Gerund as subject)

_____

4. They have discovered new treatments for speech disorders. (Gerund as object)

_____

5. The team discussed the benefits of early intervention. (Gerund as subject)

_____

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TARGET VOCABULARY

acoustic overstimulation, aging, electron microscopy, genetic defect, hair cell, irreversible, magnification, mouse, regeneration, resolution, scanning electron microscopy (sem), sensory receptor, transmission electron microscopy (tem)

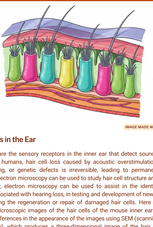


IMAGE MADE WITH GOOGLE AI

Hair Cells in the Ear

Hair cells are the sensory receptors in the inner ear that detect sound and head motion. In humans, hair cell loss caused by acoustic overstimulation, ototoxic drugs, aging, or genetic defects is irreversible, leading to permanent loss of function. Electron microscopy can be used to study hair cell structure and function. Specifically, electron microscopy can be used to assist in the identification of factors associated with hearing loss, in testing and development of new drugs, and in evaluating the regeneration or repair of damaged hair cells. Here we display electron microscopic images of the hair cells of the mouse inner ear. There are obvious differences in the appearance of the images using SEM (scanning electron microscopy), which produces a three-dimensional image of the hair cells, while TEM (transmission electron microscopy) creates a flat, two-dimensional image. The three-dimensional image captured by SEM provides more detailed information about the shape and location of the hair cells relative to each other.

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On the other hand, the TEM image provides higher magnification and greater resolution than SEM. Often it is useful to acquire both TEM and SEM images of cells such as hair cells in order to examine these structures in three dimensions and at high resolutions.

ROUSSEAU BERNARD. BRANDON RYAN C., ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING, NEW YORK, TAYLOR PUBLISHERS, 2018, P.33

A. Answer the following questions.

1. What are hair cells, and what is their role in the inner ear?
2. How can electron microscopy contribute to the study of hair cells?
3. What are the differences between SEM and TEM imaging techniques as described in the text?
4. How does the irreversible nature of hair cell loss impact treatments and research efforts?
5. Why is electron microscopy mentioned as a valuable tool for evaluating the regeneration or repair of damaged hair cells?

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Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) Hair cell loss in humans can be reversed through current medical treatments.
2. ( ) It is unnecessary to use both TEM and SEM when studying hair cells because they provide identical information.
3. ( ) Transmission electron microscopy (TEM) provides higher magnification and resolution than SEM.
4. ( ) Scanning electron microscopy (SEM) produces two-dimensional images of hair cells.
5. ( ) Hair cells in the inner ear are responsible for detecting only sound.

B. Ask questions for the given answers.

1. Question: _____?

Answer: Hair cells are the sensory receptors in the inner ear that detect sound and head motion.

2. Question: _____?

Answer: Hair cell loss caused by acoustic overstimulation, ototoxic drugs, aging, or genetic defects is irreversible.

3. Question: _____?

Answer: Electron microscopy can be used to study hair cell structure and function.

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4. Question: _____?

Answer: TEM provides higher magnification and greater resolution than SEM.

5. Question: _____?

Answer: Hair cell loss is permanent and leads to a loss of function.

C. Choose the best option.

1. Which of the following is NOT a cause of hair cell loss mentioned in the text?
   a. Aging
   b. Viral infections
   c. Ototoxic drugs
   d. Acoustic overstimulation

2. What is the primary advantage of using scanning electron microscopy (SEM) for studying hair cells?
   a. Higher magnification
   b. Greater resolution
   c. Three-dimensional images
   d. Detailed internal cellular structures

3. Why is hair cell loss irreversible in humans according to the text?
   a. Due to inability to regenerate
   b. Lack of medical treatments
   c. Genetic defects
   d. Aging process

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4. What does transmission electron microscopy (TEM) emphasize in its images of hair cells?
   a. Three-dimensional views
   b. Cellular interactions
   c. Higher magnification
   d. Spatial relationships

5. According to the text, why is it beneficial to use both TEM and SEM in studying hair cells?
   a. To compare resolution levels
   b. To create stereoscopic images
   c. To study internal and external structures
   d. To increase imaging speed

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Vocabulary Study

A. Match the words with their definitions.

1. Receptor	a) To help or give support
2. Overstimulation	b) Incapable of being changed
3. Irreversible	c) To discover the existence
4. To detect	d) A cell or group of cells that receives stimuli, sense organ
5. To assist	e) An act or instance of excessively stimulating something, particularly when the result is undesirable

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Language Study: Verb Forms

In English, the verb must match the subject in number and person. This is called subject-verb agreement.

1. Singular Subject → Singular Verb

- **He works** every day.
- **The dog barks** loudly.

2. Plural Subject → Plural Verb

- **They work** every day.
- **The dogs bark** loudly.

Common Rules:

- **I / You / We / They** → base verb (no -s):
  You like pizza.
- **He / She / It** → verb + -s in present simple:
  She likes pizza.

Be Verb Forms (Present):

- **I am**
- **You / We / They are**
- **He / She / It is**

Examples:

- **I am** happy.
- **She is** a student.
- **They are** at home.

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A. Complete each sentence with the correct form of the verb provided in parentheses paying attention to time expressions.

1. Hair cells _____ (be) the sensory receptors in the inner ear.
2. Electron microscopy _____ (use) to study hair cell structure and function in recent studies.
3. SEM (scanning electron microscopy) _____ (produce) a three-dimensional image during the experiment.
4. Researchers _____ (display) electron microscopic images of mouse inner ear hair cells last week.
5. While researchers _____ (study) the hair cell structure, they _____ (discover) significant differences in cell morphology last summer.
6. Electron microscopy _____ (help) researchers to identify factors associated with hearing loss.
7. SEM _____ (provide) detailed information about the shape and location of hair cells last month.
8. Researchers _____ (evaluate) both TEM and SEM images to compare their resolution capabilities.
9. The development of new drugs _____ (test) using electron microscopy techniques in the early experiments.

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TARGET VOCABULARY

airway, bacteria, cilia, cigarette smoke, coughing, debris, epithelial cell, infection, inhalation, life expectancy, microorganism, mucus, respiratory therapist, smoking cessation, virus



IMAGE MADE WITH GOOGLE AI

The Effects of Smoking on Epithelial Cilia

Cilia are the tiny hairlike projections on the surface of respiratory epithelial cells. Cilia help protect the nose, larynx, and trachea by sweeping away debris, such as types of toxic particles in particles that are trapped in mucus, to help clear the airway. The most common cause of damaged cilia is from smoking. Smokers are subjected to over 4,000 types of toxic particles in cigarette smoke cigarette smoke. **These (1)** toxic particles, even from the very first inhalation, can slow, and in some cases paralyze, the cilia. Eventually, the cilia of long-term smokers are destroyed, effectively eliminating a critical protective mechanism of the respiratory system. The cilia are no longer able to clear mucus. Smokers must cough up **this (2)** mucus. **This (3)** is often described as a "smoker's cough."

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A. Answer the following questions.

1. What are cilia and where are they located?
2. What is the primary function of cilia in the respiratory system?
3. What is the most common cause of damaged cilia?
4. How do toxic particles in cigarette smoke affect cilia?
5. What is the consequence of destroyed cilia for smokers?

Additionally, pathogenic microorganisms, such as viruses and bacteria, are more likely to become trapped in airway mucus, placing smokers at high risk of infection. Smoking promotes the development of a wide range of cardiovascular, respiratory, and laryngeal diseases, including cancer. Fortunately, quitting smoking lowers the risk of smoking-related diseases and can add years to life expectancy. Consequently, speech- language pathologists and audiologists (along with other health professionals, such as physicians, nurses, and respiratory therapists) can play an important role in encouraging smoking cessation.

MANUAL OF SPEECH, SWALLOWING PHYSICS , ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING, NEW YORK , THORNE PUBLISHERS, 2008, P.50

B. Answer the following questions.

1. What increases the risk of infection in smokers?
2. What types of diseases does smoking promote the development of?
3. What is the benefit of quitting smoking?
4. Which health professionals can encourage smoking cessation?
5. How does smoking affect the risk of cardiovascular, respiratory, and laryngeal diseases?

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Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) Cilia are large hairlike structures on the surface of respiratory epithelial cells.
2. ( ) The primary function of cilia is to trap toxic particles in the respiratory system.
3. ( ) Smoking introduces over 4,000 types of toxic particles into the respiratory system.
4. ( ) From the very first inhalation, cigarette smoke can paralyze the cilia.
5. ( ) Destroyed cilia in long-term smokers can no longer clear mucus, leading to a smoker's cough.
6. ( ) Quitting smoking does not significantly impact the risk of developing smoking-related diseases.
7. ( ) Pathogenic microorganisms are less likely to become trapped in the airway mucus of smokers.
8. ( ) Smoking increases the risk of cardiovascular, respiratory, and laryngeal diseases, including cancer.
9. ( ) Speech-language pathologists are not involved in encouraging smoking cessation.
10. ( ) Respiratory therapists can play a role in promoting smoking cessation.

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B. Ask questions for the given answers.

1. Question: _____?

Answer: Cilia are tiny hairlike projections on the surface of respiratory epithelial cells.

2. Question: _____?

Answer: The primary function of cilia is to sweep away debris, such as toxic particles trapped in mucus, to help clear the airway.

3. Question: _____?

Answer: The most common cause of damaged cilia is smoking.

4. Question: _____?

Answer: Smokers are subjected to over 4,000 types of toxic particles in cigarette smoke.

5. Question: _____?

Answer: Toxic particles in cigarette smoke can slow and, in some cases, paralyze the cilia, and eventually destroy them in long-term smokers.

6. Question: _____?

Answer: When cilia are destroyed, they can no longer clear mucus, leading smokers to cough up the mucus. This condition is often referred to as a "smoker's cough."

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7. Question: _____?

Answer: Pathogenic microorganisms, such as viruses and bacteria, are more likely to become trapped in airway mucus, placing smokers at high risk of infection.

8. Question: _____?

Answer: Smoking promotes the development of a wide range of cardiovascular, respiratory, and laryngeal diseases, including cancer.

9. Question: _____?

Answer: Quitting smoking lowers the risk of smoking-related diseases and can add years to life expectancy.

10. Question: _____?

Answer: Speech-language pathologists, audiologists, physicians, nurses, and respiratory therapists can play an important role in encouraging smoking cessation.

C. Read the provided sentences from the text and identify what the words in bold refer to.

1. **these (1)** refers to _____
2. **this (2)** refers to _____
3. **this (3)** refers to _____

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Vocabulary Study

A. Match each word with its correct meaning.

1. Cilia	a) Waste or remains of something destroyed
2. Debris	b) Tiny hairlike structures on cells
3. Paralyze	c) Spread of microorganisms causing disease
4. Infection	d) Related to the heart and blood vessels
5. Cardiovascular	e) To make someone or something unable to move

B. Match each word from the text with its synonym.

1. Protect	a) Capture
2. Trap	b) Support
3. Eliminate	c) Remove
4. Promote	d) Safeguard
5. Encourage	e) Advocate

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C. Fill in the table below.

Noun	Verb	Adjective
protect		protectively
trap		X
eliminate		X
promote	promotional	promotively
encourage		

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Language Study: Transitions

Transition words are words or phrases that connect ideas in a sentence or paragraph. They help your writing flow better by showing relationships between sentences or thoughts.

Common Functions of Transition Words:

1. **Addition:** also, in addition, additionally, moreover
   - Example: "She is a speech therapist. Additionally, she works with children with hearing loss."
2. **Contrast:** however, on the other hand, but, although
   - Example: "The treatment is effective. However, it takes time."
3. **Cause and Effect:** therefore, as a result, consequently, so
   - Example: "The cilia were damaged. Consequently, the airways became unprotected."
4. **Time/Sequence:** first, then, eventually, finally
   - Example: "Eventually, the patient regained full speech function."
5. **Emphasis or Example:** for example, for instance, in fact
   - Example: "Smoking causes many problems. For example, it damages cilia in the lungs."

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A. Match the transition word to its function.

Transition Word	Function
1. Additionally	a) Showing a gradual or final development
2. Fortunately	b) Expressing a positive or hopeful outcome
3. Consequently	c) Adding information
4. Eventually	d) Showing a result or consequence

B. Fill in the blanks with the correct transition word.

additionally | fortunately | consequently | eventually

1. The patient followed the treatment plan exactly as instructed. _____, the symptoms disappeared completely.
2. The medication was not taken regularly. _____, the infection spread to other parts of the body.
3. The doctor prescribed antibiotics to treat the infection. _____, she recommended rest and hydration.
4. The disease progressed over several months. _____, the patient required surgery.

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TARGET VOCABULARY

Angelman syndrome, chromosome, cognitive, deletion, developmental delay, flapping, hypermobility, hypnotherapy, imprinting, phenotype, prader-willi syndrome, pragmatic skills, receptive language, seizure, translocation

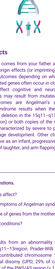


IMAGE MADE WITH GOOGLE AI

Parent-of-Origin Effects

Does it matter which gene comes from your father and which comes from your mother? Maybe. Parent-of-origin effects (or imprinting) occur when the same trait has different phenotypic outcomes depending on whether it's inherited from the mother or the father. Imprinted genes often occur in clusters along a chromosome. Only a small number of genes (~1%) are imprinted in the human genome. Specific genetic syndromes may result from mutated genes that are imprinted. Examples of such syndromes are Angelman's syndrome and Prader-Willi syndrome. Angelman's syndrome results when the mother's segment of the chromosome is missing (a deletion in the 15q11–q13 region of chromosome 15 known as the PWS/AS region) or both copies of the region are from the father's copy. Angelman's syndrome is characterized by severe to profound mental retardation, with little speech or language development. Other characteristics of Angelman's syndrome are failure to thrive as an infant, progressive ataxia, hyperkinesis, seizures, cortical atrophy, outbursts of laughter, and arm flapping.

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A. Answer the following questions.

1. What do imprinted genes affect?
2. What are two examples of the symptoms of Angelman syndrome?
3. How does the inheritance of genes from the mother and father influence the development of certain conditions?

Prader-Willi syndrome results from an abnormality in the father's segment of chromosome 15. Most cases (~70%) of Prader-Willi syndrome may be due to a deletion of the paternally contributed chromosome 15 PWS/AS region (70% of cases), maternal uniparental disomy (UPD; 29% of cases), or a translocation or other structural abnormality of the PWS/AS region (< 1% of cases). Individuals with Prader-Willi syndrome present with an IQ of 70 and typically have speech and language delays. Speech and language characteristics include poor speech sound development, reduced oral motor skills, abnormal pitch, hypernasality, receptive/expressive language delays, and poor pragmatic skills. Other characteristics of Prader- Willi syndrome include hyperphagia (excessive hunger) and food seeking (leading to obesity), neonatal and infantile hypotonia, feeding problems in infancy, and developmental delays. Males and females are equally affected, with an incidence of 1:10,000.

ROUSSEAU, BERNARD. *MASKING RONALD : ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING*. NEW YORK, THEME PUBLISHING, 2016. ERIC'S ATLAS OF SILVERWOOD PUB.

B. Answer the following questions.

1. What causes Prader-Willi syndrome?
2. What are the primary physical characteristics of individuals with Prader-Willi syndrome?
3. How does Prader-Willi syndrome affect speech and language development?

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Context Exercises

A. Mark the statements True (T) or False (F).

1. ( ) Imprinted genes are expressed differently depending on their parental origin.
2. ( ) Angelman syndrome is caused by an abnormality in the mother's chromosome 15.
3. ( ) Prader-Willi syndrome is characterized by excessive hunger and obesity.
4. ( ) Both Angelman and Prader-Willi syndromes are caused by issues in the same region of chromosome 15.
5. ( ) Individuals with Angelman syndrome typically have severe to profound mental retardation.
6. ( ) Imprinting can lead to different physical and cognitive characteristics.
7. ( ) Males and females are equally affected by Prader-Willi syndrome.
8. ( ) Both syndromes affect speech and language development.
9. ( ) The deletion of the mother's chromosome 15 in the PWS/AS region leads to Angelman syndrome.
10. ( ) Imprinting is a specific phenomenon affecting only certain genes.

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B. Ask questions for the given answers.

1. Question: _____?

Answer: Angelman syndrome is associated with a missing maternal copy or two paternal copies, while Prader-Willi syndrome is linked to a missing paternal copy or two maternal copies.

2. Question: _____?

Answer: The most common cause of Prader-Willi syndrome is a deletion of paternally contributed chromosome 15 PWS/AS region.

3. Question: _____?

Answer: Prader-Willi syndrome affects approximately 1 in 10.000 people.

4. Question: _____?

Answer: The key characteristics of Angelman syndrome are severe intellectual disability, developmental delays, seizures, and distinctive behavioral feature while Prader-Willi syndrome is associated with constant hunger, obesity, and intellectual disability.

5. Question: _____?

Answer: These conditions occur when there are errors in the imprinting process.

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C. Match the following terms with their correct definitions.

1. Imprinting — a) The genetic makeup of an individual
2. Angelman Syndrome — b) A genetic disorder associated with excessive hunger and obesity
3. Prader-Willi Syndrome — c) The physical expression of a gene
4. Phenotype — d) A thread-like structure in the nucleus that carries genetic information
5. Genotype — e) A change in the DNA sequence
6. Chromosome — f) A genetic disorder characterized by severe intellectual disability and developmental delays
7. Mutation — g) The process by which certain genes are expressed differently depending on whether they are inherited from the mother or father

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Vocabulary Study

A. Fill in the blanks with the words below which mean the following.

segment | infant | cluster | trait | outburst

1. A baby or very young child. _____
2. A group of things of the same kind that are very close together. _____
3. A particular quality in someone's character. _____
4. A part of something that is different from or affected differently from the whole in some way. _____
5. Something you say suddenly that express a strong emotion, especially anger. _____

B. Match the words with their synonyms.

1. outcomes — a) contain, involve, combine
2. depend — b) consequences, effect, conclusion
3. failure — c) harsh, serious, strict
4. severe — d) occurrence, frequency, prevalence
5. include — e) count on, rely on
6. incidence — f) defeat, failing, loss

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C. Fill in the table below.

Noun	Verb	Adjective	Adverb
		inheritable	
imprint			X
	thrive		
		occuring	X
		retarded	X
	characterize		

D. Fill in the blanks with the words from the table above.

1. Some speech disorders can _____from one generation to the next.
2. Early auditory experiences leave a significant _____on language acquisition.
3. _____conditions, like stuttering, require careful and individualized treatment plans.
4. Certain factors can _____the progress of speech therapy.
5. The disorder was _____described by the expert as complex.
6. A _____environment is crucial for the success of language intervention programs.

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7. Misarticulations often _____in children with speech sound disorders.
8. The child adapted _____to the new speech therapy techniques.
9. The _____of hearing loss can be genetic in many cases.
10. Cognitive _____can affect a child's ability to develop speech and language skills.

Language Study: Due to

"Due to" is used to show a cause-and-effect relationship. We use nouns, pronouns, or gerunds after "due to".

- The therapy's cancellation was due to the patient's parents.
- Due to the unforeseen circumstances, the conference has been rescheduled.
- The experiment was inconclusive due to the insufficient data.

Here is an example from the passage:

- Prader-Willi syndrome may be due to a deletion of the paternally contributed chromosome 15 PWS/AS region

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A. Read each sentence carefully. Rewrite the sentences with "due to" without changing the meaning.

1. Delayed speech development in toddlers is often caused by a lack of early verbal interactions.

_____

2. Difficulty in understanding speech can arise from auditory processing disorders.

_____

3. Children with autism may face communication challenges because of social and behavioral differences.

_____

4. Language delays in bilingual children are sometimes linked to limited exposure to each language.

_____

5. The need for speech therapy increased after the brain injury.

_____

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6. Speech impediments in children can be attributed to genetic factors.

_____

7. Cognitive flexibility is enhanced in children exposed to multiple languages.

_____

8. Temporary hearing loss is often the result of chronic ear infections.

_____

133

The Content-Based Language Teaching Approach—one of the effective methods frequently used in English for Specific Purposes (ESP) courses—and, in particular, the Topic-Based Teaching Model, aim to develop students' language skills in professional and academic contexts by focusing on situations they will encounter in the real world. This approach assumes that language teaching must be tailored to the specific language and communication needs of individual students and that particular attention must be paid to the context in which they use English.

The series of subject-specific English textbooks produced by the School of Foreign Languages at Cappadocia University has been developed to support students' English reading skills—which they will need in their academic and professional lives—through reading passages adapted to their respective fields.

The reading texts, vocabulary exercises, practical activities and key language structures provided for revision in the book are designed to develop students' reading, comprehension, interpretation and communication skills in tandem. The numerous text analyses and vocabulary exercises enable students to understand the academic terminology and reading passages they encounter in their current academic lives.

These books aim to serve as a guide for students and can be used as a reliable reference both during their university studies and after graduation.

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