AUDIOLOGY REVIEW

Preparing for the Praxis and Comprehensive Examinations

Jeremy J. Donai, AuD, PhD
Katharine Fitzharris, AuD, MS, PhD, CCC-A

PLURAL PUBLISHING INC.

PLURAL PUBLISHING
INC.

9177 Aero Drive, Suite B
San Diego, CA 92123

email: information@pluralpublishing.com
website: https://www.pluralpublishing.com

Typeset in 12/14 Adobe Garamond by Flanagan's Publishing Services, Inc.
Printed in the United States of America by Integrated Books International

Audiology review: preparing for the praxis and comprehensive examinations
Library of Congress Cataloging-in-Publication Control Number: 2023042392
ISBN-13: 978-1-63550-552-8
ISBN-10: 1-63550-552-6

Contents

Section III. Assessment and Differential Diagnosis

Section IV. Prevention, Identification, and Treatment

Preface

Audiology Review: Preparing for the Praxis and Comprehensive Examinations is intended to serve as a review guide for audiologists and audiology students preparing for formal assessments such as Praxis and comprehensive examinations. The material from this text serves as a comprehensive resource for instructors teaching courses (such as capstone courses) designed to review audiology content and prepare students for various types of evaluations. The text is also designed to be a centralized resource for practicing audiologists and those who are required to take the Praxis exam. Over 13 chapters, topics related to audiology basics, diagnostics, treatment, research, and professional issues are reviewed. Section I begins with a description of test question types, then discusses strategies to select an answer, and finally discusses techniques to utilize when taking the Praxis. Section II covers the fundamentals of audiology: auditory and vestibular anatomy, physiology, and disorders; psychoacoustics, principles of sound, and audiometric instrumentation; as well as information regarding the development of speech and language in individuals with typical and atypical hearing. Section III further discusses audiological diagnostic techniques for adult and pediatric patients, vestibular testing and interpretation, and differential diagnosis of auditory and vestibular disorders. Section IV is a review of the screening and identification methods for hearing and balance disorders; industrial audiology; and treatment practices for amplification, implantable devices, as well as audiological counseling, and documentation. Section V concludes the handbook with a review of research, information on evidence-based practice, and professional topics in audiology. Together, this handbook covers information presented during graduate-level education to prepare the reader to approach milestone assessments with confidence. There are practice questions at the end of each chapter, as well as additional materials available on the PluralPlus companion website, including a practice exam and integrated cases with questions.

Contributors

Jamie M. Bogle, AuD, PhD
Assistant Professor and Division Chair
Mayo Clinical Arizona
Division of Audiology
Scottsdale, Arizona

Jackie L. Clark, BS, MS, PhD
Clinical Professor of Audiology
University of Texas at Dallas
Dallas, Texas

Trey A. Cline, AuD, CCC-A
Doctor of Audiology
Department of Otolaryngology-Head and Neck Surgery
University of Kentucky
Lexington, Kentucky

Jenna Cramer, AuD, CCC-A
Instructor
Texas Tech University Health Sciences Center
Lubbock, Texas

Jeremy J. Donai, AuD, PhD
AuD Program Director
Associate Professor
Texas Tech University Health Sciences Center
Lubbock, Texas

Katharine Fitzharris, AuD, MS, PhD
Associate Clinical Professor
Wichita State University
Wichita, Kansas

Laura N. Galloway, AuD, CCC-A
Assistant Professor
Department of Otolaryngology-Head and Neck Surgery and Communication Disorders
University of Louisville
School of Medicine
Louisville, Kentucky

Karah Gottschalk, AuD, PhD, CCC-A
Research Audiologist
James H. Quillen VA Medical Center
Mountain Home, Tennessee

Tori J. S. Gustafson, AuD
Associate Professor
Department of Speech, Language, and Hearing Sciences
Texas Tech University Health Sciences Center
Lubbock, Texas

Brittany Hall, MS, CCC-SLP, LSLS Cert. AVT
Assistant Professor and Program Director
Department of Speech, Language and Hearing Sciences
Texas Tech University Health Sciences Center
Lubbock, Texas

Candace Bourland Hicks, PhD, CCC-A
Professor and Chair
Department of Speech, Language, and Hearing Sciences
Texas Tech University Health Sciences Center
Lubbock, Texas

Melanie Lutz, AuD, CCC-A
Audiologist
UPMC Children's Hospital of Pittsburgh
Pittsburgh, Pennsylvania

Alex Meibos, AuD, PhD, CCC-A
Assistant Professor
School of Speech-Language Pathology and Audiology
The University of Akron
Northeast Ohio AuD Consortium
Akron, Ohio

Kay T. Payne, PhD, CCC-SLP (Retired)
Professor Emeritus
ASHA Honors
Washington, DC

Leigh Ann Reel, AuD, PhD, CCC-A
Associate Professor
Department of Speech, Language, and Hearing Sciences
Texas Tech University Health Sciences Center
Lubbock, Texas

Angela Van Sickle, PhD, CCC-SLP
Assistant Professor
Department of Speech, Language, and Hearing Sciences
Texas Tech University Health Sciences Center
Lubbock, Texas

Emily Jo Venskytis, AuD, ABAC, CCC-A
Director of Clinical Education
Assistant Professor
MGH Institute of Health Professions
Boston, Massachusetts

C. Renee Zimmerman, AuD, CCC-A
Assistant Professor and Audiology Clinical Coordinator
Department of Speech, Language, and Hearing Sciences
Texas Tech University Health Sciences Center
Lubbock, Texas

Chapter 1

Test-Taking Strategies

Kay T. Payne

Introduction

Perhaps you have observed that you perform better on some types of exams and not quite as well on others. For example, despite all effort devoted to study, you score high on classroom exams but not standardized tests such as the Praxis. The reason for this difference is that, rather than mere passive verbatim recall of course knowledge, Praxis questions require active use of logic, cognitive processes, critical thinking, and application of academic knowledge. This is often the case for comprehensive examinations required by academic training programs, and as such, the information from this chapter should be helpful on those types of exams. For example, note the difference between the following questions.

In acoustic reflex decay testing, an abnormal decay occurs when the amplitude of the reflex decreases

A. At least one fourth of the initial amplitude
B. At least one half of the initial amplitude
C. Within the first 2 seconds
D. Within the first 5 seconds

An adult patient free of dexterity issues has normal hearing through 750 Hz with a steeply sloping, moderate-to-severe sensorineural hearing loss. Which of the following is most likely to be an appropriate hearing aid fitting?

A. Full shell with small vent
B. BTE with open dome
C. BTE with full shell mold and small vent
D. CIC with medium vent

In addition to the active reasoning skills required to interpret and answer the questions on the Praxis, the time-limited, multiple-choice format requires the examinee to have a planned approach and procedure for advancing through the exam, as well as proven strategies to optimize performance. This chapter will discuss (1) reasoning skills for understanding the question and selecting the answer, (2) guessing strategies, and (3) a recommended test-taking procedure for successful performance on

the Audiology Praxis. Demonstrative Praxis-type questions with explanations will be presented, as well as additional questions for practicing the strategies.

For the sample questions above, the first question, known as verbatim recall, is typical of classroom exams wherein you need only recall the answer. Naturally, if you recognize the answer, nothing further is required. For the first question, you should immediately recognize the correct answer as (B). In acoustic reflex decay testing, a signal is presented for 10 seconds, and abnormal decay is observed when the amplitude decreases more than half of the initial amplitude.

By contrast, the second question, which is typical of the Praxis, requires you to be actively engaged in specific cognitive processes and to use professional judgment in selecting the correct answer. For the second question, utilizing your inherent mental processes, you should reason that since hearing in the low frequencies is normal, it is important that the hearing aid provide less amplification for low frequencies than for high frequencies and account for the occlusion effect. A BTE hearing aid with an open dome is the best means for amplifying the high-frequency region and minimizing occlusion by allowing a maximum amount of low-frequency information to escape the ear canal with the open dome. Therefore, (B) is the correct answer.

Known as reasoning skills, several cognitive processes required for Praxis-type questions will be discussed in this chapter. The cognitive processes and logic are demonstrated in the explanations to the correct answers. It is important to know that reasoning skills are not a general approach to taking the Praxis, but conscious processes to be executed for tackling questions that you must methodically think through or make an intelligent guess.

None of the processes are new skills to be learned, nor do they require you to memorize them. Rather, they are inherent and easy operations to be mindful of and apply when you encounter tough questions. As you will see, the reasoning skills are often tied to a typical question format, but not exclusively. Indeed, you can elect to use any reasoning skill with any type of question if it assists in selecting the answer. While reasoning skills are required for most questions on the Praxis, some are useful for understanding the question, while others are to be applied when selecting the intended answer. In fact, you will find that you often use reasoning skills for both the question and the answer.

Understanding the Question

Focusing

Focusing requires conscious awareness of what the question is really asking, that is, what the specific points of information in the question stem imply and what information is relevant to the answer. The question stem may appear as a wordy, narrative clinical scenario from which you must extrapolate the facts and intuit their relevant implication. The major demand of focusing is the ability to summarize wordy questions into concise statements. As a demonstration, note the two versions of the next question.

Version 1

In an investigation of infants' ability to discriminate auditory stimuli, the investigator presents pure-tone signals at various frequencies and dB levels to 30 infants between the ages of 3 and 6 months and observes changes in the rate of their sucking reflex response. The investigator observes an increased rate of sucking correlated with increments of increases in dB level but not frequency. For this investigation, the sucking response is the. . . .

Version 2

In an investigation of infants' discrimination of auditory stimuli, the investigator presents stimulus sounds and observes changes in the rate of sucking reflex responses. For this investigation, the sucking response is the . . .

Now, consider the answer options.

A. Intervening variable
B. Dependent variable
C. Independent variable
D. Control variable

Perhaps a result of test anxiety, or other reason, some examinees fail to translate Version 1 into the more precise Version 2 or recognize that the question is not concerned with the experimental procedures or the outcomes, but the identification of one of the variables. The correct answer is (B). In an experimental study, the dependent variable is the response or change that the investigator measures after applying a stimulus to elicit a response.

Abstracting

This type of question presents information or evidence for the examinee to interpret the meaning of data, extrapolate relationships among variables, and draw appropriate conclusions. Abstracting also requires making clinical judgments, knowledge of and application of diagnostic and treatment principles, and reading tables, charts, graphs, spectrograms, tympanograms, and audiograms. Specifically, abstracting requires the following operations: deriving meaning from charts and graphic displays; identifying relationships among variables presented visually; deriving implications of test results, statements, or conditions; generalizing data or information to novel conditions; and applying principles or rules to novel situations. The following question presented verbally is typical of questions requiring abstracting.

A patient has a conductive hearing loss accompanied by absent middle ear muscle reflexes (ipsilateral and contralateral), delayed waves I, III, and V on the auditory brainstem response, and excellent word recognition scores at 40 dB SL. This result is suggestive of:

A. Cochlear dysfunction
B. Temporal lobe lesion
C. Middle ear dysfunction
D. VIIIth cranial nerve disorder

For this question, the examinee must utilize abstracting to piece together the symptoms described in the question and mentally formulate a diagnosis. The correct answer is (C) since the diagnostic profile suggests middle ear dysfunction (conductive loss, absent reflexes, delayed ABR waves, and preserved word recognition at 40 dB SL).

Ethics and Values

For the Praxis, examinees are frequently required to make ethical clinical decisions based upon professional values and appropriate clinical procedures. These may be reflected in both the question and the answer options. Typical values questions include law abidance, fairness and equity, protecting patient rights, professional decorum, referrals/cooperation with other professionals, objectivity, and the scientific method. It is extremely important to read the ASHA Code of Ethics. Such ethics questions are quite easy, but the points in the Code of Ethics are sufficiently specific that it can be difficult to select the answer without having read the document. The following is an example of a question that reflects ethics and professional values.

An audiologist completes an evaluation due to a complaint of recent hearing loss in one ear. Results of the evaluation reveal a moderate-to-severe, flat sensorineural hearing loss in the right ear and normal hearing in the left ear. The word recognition scores for recorded, full-list NU-6 in quiet at 40 dB SL is 24% in the right ear and 100% in the left ear. Which of the following is the audiologist's appropriate next step?

A. Recommend a Contralateral Routing of Signal (CROS) amplification system
B. Refer the patient for a comprehensive auditory processing disorder (APE) evaluation
C. Refer the patient to a physician
D. Refer the patient for magnetic resonance imaging (MRI)

According to the ethical and professional values of the profession, any recent onset of hearing loss and significant, unexplained, asymmetry between right and left ear requires medical evaluation. Thus, the patient should be referred to a physician for diagnosis, so (C) is correct.

Another type of ethics and values question requires the examinee to recognize and assume the mind-set of the question writer. In the classroom, students adapt to the instructor's style and what the instructor deems as important. Either consciously or subconsciously, students learn to predict what will be on an exam. However, for the Praxis, one should not assume that the emphasis or camp of thought presented in his or her training applies universally or that the same textbooks are used overall. Thus, predicting the examiner is a useful skill that involves selecting the universal or most socially acceptable response. This is supremely important for professionals who have been away from academic study for a prolonged time and may have developed a personal slant, approach, or belief. It is necessary to recognize these and set them aside for the Praxis and select the textbook answer or the most highly professional option.

Negative Stem Questions

Best practices for test question writing recommend against negative stem questions, but they are nevertheless used quite often. Negative stem questions often contain the words *not*, *least*, or *except* or negative prefixes in the terminology. These questions sometimes pose a problem because they require a temporary cognitive shift that demands keen concentration. The best strategy for negative stem questions is known as the true/false strategy, which will be detailed further in a subsequent section. For the true/false strategy, as you read each option, physically (or mentally if the test is online) mark options that are true with **T** and those that are false with **F**. This will provide an immediate visual indication of the correct answer. Then select the option that is consistent with the question stem as it is stated.

An additional strategy is to write the negative word on scratch paper as a reminder of its significance, then select the answer option that is most incompatible with or unlike the others. The following is an example.

Which of the following is the most commonly accepted reason for not using pure tones during soundfield testing?

A. Responses to pure-tone stimuli are less reliable.
B. Pure-tone stimuli are more prone to create standing waves during soundfield testing.
C. Responses to pure-tone stimuli in soundfield are too difficult to hear for most patient populations.
D. Pure-tone stimuli cannot be accurately calibrated for soundfield testing.

After mentally emphasizing the negative word *not*, you must rule out the faulty answer options. Using the true/false method, your decisions in selecting the answer should be visibly rendered as indicated below. This method clearly displays the correct answer as (B) since it is the only one that is true.

A. *F*
B. *T*
C. *F*
D. *F*

Key Words

Key words are superlatives, quantity/quality words, adjectives, or adverbs within the question or answer option that are crucial to selecting the correct answer or eliminating incorrect answers. Some key words provide valuable clues to the correct answer due to their semantic similarity or dissimilarity. The list below contains typical key words for Praxis questions.

- *Best* signals that the answer options include two or more plausible options.
- *Most* and *least* signify a hierarchy among the answer options.
- *Primary* signifies first in sequence, priority, or immediacy.
- *Major, main* signify a hierarchy of importance.
- *Preferred* signifies a value judgment.

Consider the following question that contains a typical and important key phrase.

A long-time hearing aid user is fit with a new set of hearing aids. What is the most likely indicator of good acceptance by the patient of the new technology?

A. New hearing aid processing strategy matches previous aids
B. Client Oriented Scale of Improvement (COSI) goals as described by the patient
C. Improved wireless connectivity features of the new hearing aids
D. Patient's declaration of high motivation to wear new amplification

The key phrase *most likely* signals that several options are plausible, hence it will be necessary to prioritize the statements according to their impact. Option (D) is correct since the patient will

successfully adjust to a hearing aid when she or she feels motivated to accept it as an alternative for better communication.

Selecting the Answer

Some Praxis-type questions require reasoning skills to be used when choosing among the answer options. For this type of question, the examinee must select the single best answer. Always remember that the best answer is the textbook response rather than the examinee's personal opinion or experience. Like skills that assist in understanding the question, reasoning skills applied to the answer options are not a test-taking approach applied to every question, but cognitive operations for use only when you are uncertain, or if you do not immediately recognize the answer. The skills presented in this section are familiar operations that you already perform in daily life. However, it is important to recognize that they are required for Praxis-type questions and to practice these skills to be able to apply them automatically and instinctively while taking the Praxis.

Critiquing

While it may be said that all questions involve critiquing the answer options, this reasoning process deserves special mention. In critiquing, after reading the question, each answer option is critiqued individually before deciding upon the answer. Typically, the answer options are lengthy or wordy. Elements of critiquing involve several cognitive processes, including determining the relevance of the statement, determining and evaluating the negative attributes, identifying the worst answer, and applying the process of elimination. Critiquing questions often requires a relative amount of academic knowledge, as reflected in the following example.

An audiologist has completed an evaluation of an adult client. After providing informational counseling, which of the following would not be an expected outcome of the counseling session?

A. The client will understand the degree of hearing loss.
B. The client will share feelings about hearing loss and its effect on their life.
C. The client will know about assistive listening technologies.
D. The client will be knowledgeable of aural rehabilitation options.

As you focus on the question, do not overlook the key phrase *informational counseling*, or the negative stem format. Then, as you critique each option as to whether it is an outcome of informational counseling, the correct answer is (B). Sharing of feelings would not be an expected outcome of informational counseling.

Comparing

Like questions where critiquing is required, some questions require conscious, active comparison of the answer options. Here, the stem appears to be a verbatim recall question. However, selecting the correct answer requires more than mere recognition or recall. Comparison questions require the examinee to discriminate between the options and evaluate quality, degree, impact, or relevance as it relates to

the information presented in the question. As an example, the next question requires comparing the answer options.

A 40-year-old female experienced trauma to the head during a motor vehicle accident approximately 2 months ago. She was hospitalized for a week after suffering a concussion and lacerations to her head and scalp. Upon discharge from the hospital, she is reporting brief (15–20 second) episodes of vertigo when going from a sitting to a supine position and when rolling over in bed. The case history should lead the audiologist to suspect which of the following?

A. Central vestibular dysfunction
B. Temporal bone fracture
C. Benign paroxysmal positional vertigo (BPPV)
D. Ossicular disarticulation

This question demonstrates how focusing on the question stem, together with comparing and critiquing the answer options, can lead to the correct answer. The main concerns of the question are the brief symptoms of vertigo when moving from sitting to a supine position and/or rolling over in bed. Together with this information, the examinee must then compare each option for its relevance to the question and assess its potential contribution to the symptoms. Option (C) is correct because head trauma can lead to BBPV.

Classifying

Questions that require classification are typically theoretical and abstract. The question stem may be brief and contain little or no information, while it is the answer options that are wordy and contain the necessary facts. Classification involves discriminating the subtle differences among the options, distinguishing their quality and quantity aspects, and prioritizing and placing them in hierarchical relationships. The question might require selecting the worst answer or the one that is not consistent with the others. The question stem often contains key words *best*, *least*, *primary*, *preferred*, *major*, or *main*. Several answer options may be plausible, but there is one single best answer. The following question demonstrates classifying.

A typically developing middle-school age child who is performing at grade level is referred for further evaluation after failing a school hearing screening. Although she reports no difficulties with her hearing, the audiologist finds hearing loss after a complete audiological workup. Which of the following hearing losses is most likely to go unnoticed?

A. Bilateral moderate sloping to severe sensorineural hearing loss
B. Precipitously sloping to moderately severe sensorineural hearing loss
C. Bilateral moderate conductive hearing loss
D. Bilateral mild to severe mixed hearing loss

After classifying the options to select the condition most likely to be unperceived, (B) is correct. A sharply sloping bilateral sensorineural hearing loss most likely affects only high frequencies, and children with this type of hearing loss may be able to function relatively normally in most situations. Thus, the hearing loss could be unperceived.

Creating

Praxis-type questions frequently present course material differently than the way it was introduced in the classroom. Typically, Praxis questions present a clinical case scenario that requires knowledge of facts or principles to be transformed into a plan of action. Hence, these questions call for active imagination through generating novel thoughts or innovative ideas, or generating a realistic situation from a theoretical notion. Creativity questions may require you to select a course of action and make a diagnosis, prognosis, or recommendation for treatment as in the following example.

While recording the auditory brainstem response (ABR), how can an audiologist effectively delineate between true ABR waveforms and a cochlear microphonic?

A. Increasing the click rate
B. Using supraural earphones to eliminate artifact
C. Lowering stimulus intensity
D. Reversing the polarity of the stimulus

Creativity questions often resemble those requiring critiquing, classifying, or comparing. Indeed, these skills can be used in conjunction or in lieu of creating. The nuance of difference is that in creativity questions, the clinical case scenario is unique, and the answer represents a novel, imaginative thought. For this question, (D) is correct. The cochlear microphonic response can create "noise" that makes it difficult to interpret the ABR waves, such as in auditory neuropathy spectrum disorder (ANSD). The polarity of the cochlear microphonic response, but not that of the ABR, varies with that of the stimulus, so by reversing (e.g., going from rarefaction to condensation) the polarity of the clicks used as stimuli, the cochlear microphonic response will be canceled out and a true ABR can be visualized.

Fusing

Fusing is the inverse of classifying. However, the fusion question may not necessarily contain key words such as *most* or *best.* The question usually contains little information, while much information is contained in the answer options. One or more options might need to be eliminated initially. Fusion questions require finding commonalities among the answer options and identifying the ultimate option that encompasses the others, hence fusing the options. The correct answer is the one that is the most complete. In these questions, several options are fitting or true. The correct answer is the one that is most inclusive or most general in scope, while the others are too limited and specific. The following is an example:

Self-advocacy in the realm of adult aural rehabilitation includes listener training wherein the patient is taught to:

A. Ask the talker to slow down their rate of speech
B. Inform the speaker of the listener's hearing loss
C. Employ a variety of techniques to elicit additional responses from the speaker
D. Employ acoustic information to detect the speaker's message