# SEEING AND HEARING SPEECH

**lessons in lipreading and listening**

SENSIMETRICS

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Thank you for purchasing Seeing and Hearing Speech.

If the Seeing and Hearing Speech software that you have purchased does not work as described in this User Guide, and your problem cannot be resolved, we will either provide upgraded software or authorize you to return the product for a refund.

## Technical Support

One year of free technical support for Seeing and Hearing Speech is provided from the date of purchase.

If you need technical support, please visit the Seeing and Hearing Speech website at http://www.seeingspeech.com and click on the "Support" link for help with known problems and for answers to Frequently Asked Questions (FAQ). If your problem is not addressed there, please send a description of it by email to tech-support@sens.com.

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# Contents

# Chapter 1: Introduction

**W**elcome to Seeing and Hearing Speech, a training program in auditory-visual communication for people with hearing loss. This program has been designed to provide practice in putting together the visual (what we see) and auditory (what we hear) signals and using this combined information to improve speech understanding.

Many people with hearing loss remark that "I hear best when I've got my glasses on!" and find it difficult to understand why this is so. The reason is not really all that complex. As a general rule, those speech sounds that are hard to hear are produced with mouth and lip shapes that are usually quite easy to see, and those speech sounds that are hard to see are usually fairly easy to hear. The visual and auditory signals complement one another. Using them together by both looking and listening helps make understanding speech much easier than it is by looking or listening alone.

Practice with Seeing and Hearing Speech should provide you with two kinds of benefits: 1) direct improvements in communication effectiveness; and 2) reduced anxiety in difficult listening situations. Both of these benefits can be achieved through repeated practice with the lessons presented in the program and through an understanding of the nature of auditory-visual communication.

With respect to communication effectiveness, the primary goal of Seeing and Hearing Speech is to have you learn the associations between the heard and seen cues for the elements of speech - the vowels and the consonants. Learning those associations will come, with practice, for almost everybody. With that skill your ability to understand words and short phrases will be enhanced. You should see improvements over time in your test scores as well as in your understanding of brief utterances in everyday conversation.

A more difficult task, which unfortunately is learned more slowly, is remembering and interpreting a long sequence of cues, such as occurs in sentences. If you have ever tried to learn a foreign language you may appreciate how much easier short phrases and words are to understand than long passages. Using lipreading as a supplement to hearing is similar. For most people, this limitation on the ability to remember and process the visual elements in longer utterances will be a major hurdle that will take a long time to overcome.

Ease of speech communication can also be enhanced through the use of stress and intonation cues, facial gestures, and context, all of which are presented in Seeing and Hearing Speech. Many of these types of cues, such as rising voice pitch and raised eyebrows, are well known from everyday experience. However, it is beneficial to have a heightened awareness of them, and to know that different people make those cues differently and to varying degrees. It is likewise good to be keenly aware of the communication context so that you can make use of expectations about what might be said. The use of context is also important for piecing together a complete phrase or sentence from knowledge of some of the parts. Training in all of these areas, which go beyond the spoken sequence of vowels and consonants, will improve your communication ability.

Anxiety in communication situations is one of the main problems experienced by people with hearing impairment, and it is hoped that practice with Seeing and Hearing Speech will help to reduce it. You will deal with difficult communication settings more easily not only because you can combine the visual and auditory cues more effectively, but also because you will have a better understanding of auditory-visual communication and your own abilities. Knowing that there are real limitations in lipreading cues helps one accept that some communication situations will be just too difficult. The stress-free practice you have with Seeing and Hearing Speech will help you appreciate the limitations in lipreading alone, and the need to bring together all available cues - auditory, visual, and contextual - for better speech understanding.

The following chapter (Chapter 2, "Overview") presents a brief summary of Seeing and Hearing Speech and its primary features. Chapter 3 will take you step-by-step through one lesson as a detailed example of how all the lessons in the program are used. It will give complete descriptions of the controls, options and features that Seeing and Hearing Speech makes available to you. Guidelines for how the lessons should be used by people with various degrees of hearing loss are given in Chapter 4. The storage and display of test results are explained in Chapter 5. Chapter 6 provides helpful background on auditory-visual speech communication.

This User Guide is available as an Adobe Acrobat/Reader .pdf document on the product CD-ROM. If you do not already have Adobe Reader on your computer, a copy of the Adobe Reader software installer is availble on the Seeing and Hearing Speech CD-ROM in a folder labeled "Adobe Reader." The Seeing and Hearing Speech User Guide .pdf document can be viewed in full color on the screen. It will also come in handy if you misplace the printed User Guide.

# Chapter 2: Overview

T his chapter of the User Guide presents an overview of Seeing and Hearing Speech. It briefly describes how the lessons are organized, how to navigate your way through the program, and how a typical lesson works. More detailed descriptions of these topics will be presented in subsequent chapters. For help with the installation of the program on your computer, see "Appendix B: Installation and Setup."

## Organization

Seeing and Hearing Speech is a collection of lessons designed for training in the use of visual and auditory cues for understanding speech.  The lessons are organized into four broad groups devoted to different aspects of speech and the speech-reception task: 1) Vowels, 2) Consonants, 3) Stress, Intonation, and Length, and 4) Everyday Communication. Within each of these four groups there are subgroups of lessons that focus on specific aspects of the group. For example, one subgroup of lessons within the Consonants group covers the consonants "p", "b", and "m". Lessons within a subgroup typically differ in the nature of the speech material used. Some lessons use isolated words, some use a short phrase, and others use sentences. All of the lessons in Seeing and Hearing Speech are listed in Appendix A.

## Navigation

Starting the Seeing and Hearing Speech program presents you with a box for name entry, and then the Startup screen. By clicking the Contents button on the Startup screen, you will be given a choice among the four lesson groups. After choosing a group, you will then be given the menu of subgroups. Finally, after choosing a subgroup, you will select a specific lesson.  At each level in this hierarchy explanatory text is presented to help you understand the content and goals at that level. You can always go back up to a higher level in the hierarchy by clicking the Back button.

A detailed example of how you get to a specific lesson is given in Chapter 3, "Getting Started."

## Lesson Structure

A typical lesson screen is shown below. Every lesson has buttons on the left side of the screen on which a word, phrase, or sentence is printed.



On the right side of the screen is the video window, where the video footage of a person speaking is presented. Each button on the left is paired with a speech utterance. For example, in a lesson that uses isolated words, the button labeled "book" would be paired with an audio/video recording of the talker speaking the word "book". Lessons that use sentences, however, sometimes use a shortened label on the button that pairs it to a sentence. For example, the button labeled "book" might be paired with the sentence "She wrote it in her book."

## Practice and Test Modes

Every lesson in Seeing and Hearing Speech can be used in either of two modes - practice or test. The choice of mode is made prior to entering the lesson.

In practice mode you select the item to be presented by clicking one of the labeled buttons. Practice mode allows you to observe each of the speech utterances in a lesson at will, with the ability to adjust speech presentation conditions interactively (see below).

In test mode the program selects the item to be presented, after which you have to click the button you think is paired with that item. By so doing, the program tests your ability to identify the spoken items in the lesson under conditions that are fixed in advance. No adjustments to speech presentation conditions (see below) are allowed in test mode. These conditions are selected prior to the start of a lesson. Your test results will be saved so that you can track your progress over time (see Chapter 5, "Viewing Results").

## Speech Presentation Conditions

Seeing and Hearing Speech lets you choose among three different speech presentation conditions:

Auditory-Visual, in which both the sound and video are presented;

Auditory Only, in which only sound is presented; and

Visual Only, in which only video is presented.

These choices are made using the two buttons in the middle of the bottom of the screen. Clicking the button with the video screen icon turns the video on and off; clicking the button with the loudspeaker icon turns the audio on and off.

Depending on the similarity of the speech utterances used, some lessons will be very difficult using Auditory Only reception or Visual Only reception. In addition, some users with severe hearing loss may find some lessons difficult with Auditory-Visual presentation. To guide you in your choice, every lesson contains indicators of the appropriateness of the lesson for each of the three presentation conditions.

In addition to the three combinations of auditory and visual speech presenta-tion, the quality of the auditory cues that you receive can be controlled in either of two ways:

Volume Level.  By adjusting the volume control on your loudspeakers, you can reduce the volume to such a low level that you will be forced to attend more carefully to lipreading in order to pick up the information necessary for speech understanding.

Background Noise.  By clicking the Noise button you are given control of noise that degrades the audio recording and makes the speech-reception task harder.  The type of noise and the volume level you choose will be determined both by your speech reception skills and by the complexity of the materials being practiced.

In order to help you see the lip and mouth formations that signal various speech sounds, Seeing and Hearing Speech allows you to slow down the talker.  (Imagine how useful this would be in everyday life!).  By clicking the Slowmotion button, the video (only) of the previous item will be repeated at half speed.

This overview has presented only briefly the main features of Seeing and Hearing Speech.  All of the topics discussed so far, as well as background and training guidelines, will be explained in detail in the following chapters.

# Chapter 3: Getting Started

**T**his section of the manual takes you step-by-step to a specific lesson and shows you the ways in which the lesson can be used.

## Navigating to a Lesson

This section of the guide will explain the steps required to reach a particular lesson, starting from the beginning. After the program has been installed (see Appendix B), there will be an icon on your desktop labeled "Seeing and Hearing Speech." Double click on the icon to start the program.

### *The Startup Screen*

When you start Seeing and Hearing Speech, this is the first screen you will see.
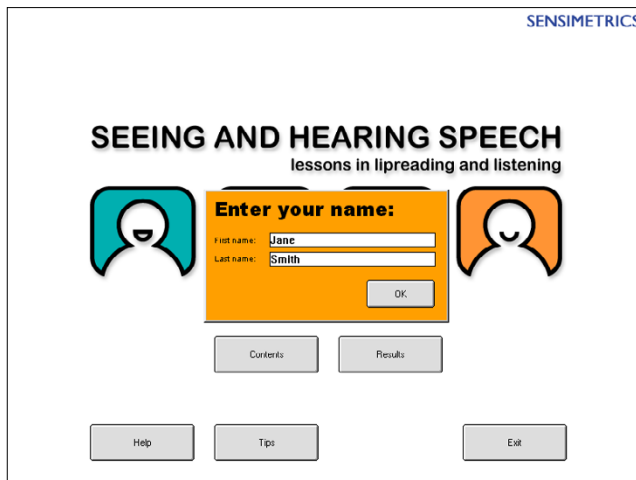
The first step is to enter your name. Your first name is sufficient. It is possible to enter the program without entering a name, but this could cause problems later. If someone else also uses the program without a name, your results and theirs will be mixed together. Therefore, it is best to enter a name.

When the program encounters a name that has not been used before, it will ask if that user's name should be added. Click Add User and the name-entry window will disappear. Your name is now registered in the program. Use that same name to enter the program in the future.

The five buttons on the Startup screen are used either to move around the program or to provide you with information or assistance. They perform the following functions:

Contents  This takes you to the table of contents for Seeing and Hearing Speech. Click this and you will be able to select one of the four lesson groups.

Results  As you work your way through Seeing and Hearing Speech a running record is kept of your test results. Over time you will want to look at these scores to check on your progress. Clicking this button provides you with access to your scores.

Help  Click this and you will obtain information about each of the buttons on the screen. When you have finished reading the information, click OK to return to the main screen.

Tips  This button provides you with advice about how to use Seeing and Hearing Speech. When you have finished reading the information, click OK to return to the main screen.

Exit  Click this button when you want to exit the program.

The next step is to move into the program. Click Contents to go to the Contents screen.

## *The Contents Screen*

This screen shows the four major lesson groups in Seeing and Hearing Speech.
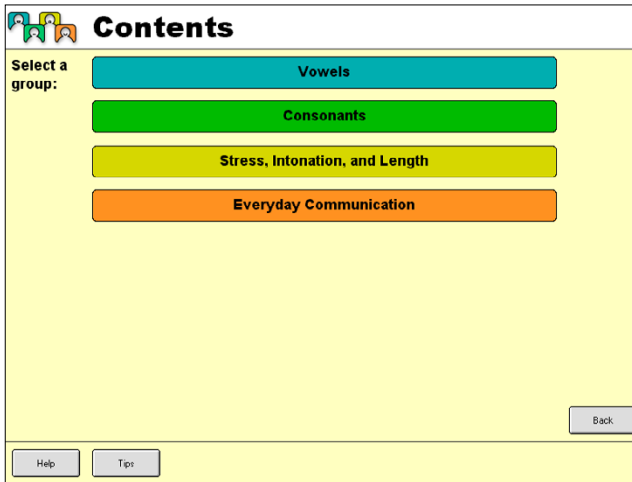


Lessons in the Vowels and Consonants groups provide practice in the recognition and discrimination of these two major types of speech sounds, emphasizing both the sounds and the lip shapes that distinguish them.  Lessons in Stress, Intonation, and Length give you practice with factors such as pitch, intensity, and duration cues, which are not associated with specific vowel or consonant sounds. Lessons in Everyday Communication are built around various real-life contexts and situations. They are intended to help you exercise the knowledge you gained from the other lessons; they also give you practice in using your knowledge of what *might be* said in a given context to help you understand what *is* said.

You can select any of the four lesson groups by clicking the label. For this tutorial, however, click Vowels. This will bring up the text screen shown here, which provides you with some useful information about the vowels of American English, and which you should read before you go on to the next screen.
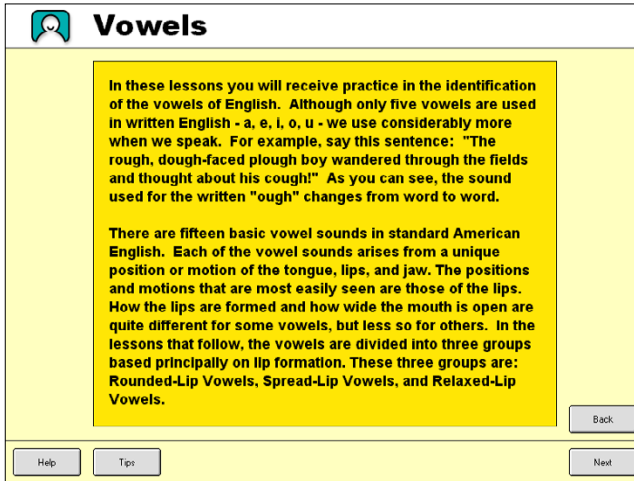


At the bottom of the screen you can see four buttons. The Help button can be used to get information about the buttons on the screen, while Tips will answer questions you might have about the use of Seeing and Hearing Speech. On the right hand side of the screen are the other two buttons, marked Back and Next. These navigation buttons are used to move you backwards and forwards, respectively, through Seeing and Hearing Speech.

In order to reduce the need to manipulate the mouse, two keyboard keys have been made to have the same effect as clicking the Back or Next buttons. The 'Esc' key (usually in the upper left part of the keyboard) is equivalent to clicking Back, and the 'Enter' key is the same as clicking Next. These keyboard shortcuts work throughout the program, wherever Back or Next appear on the screen.

Once you've finished reading the information on the screen, click Next (or press Enter) and you will go to the next screen. [If you click Back (or press Esc) instead of Next you will return to the Contents screen].

## *The Subgroup Selection Screen*

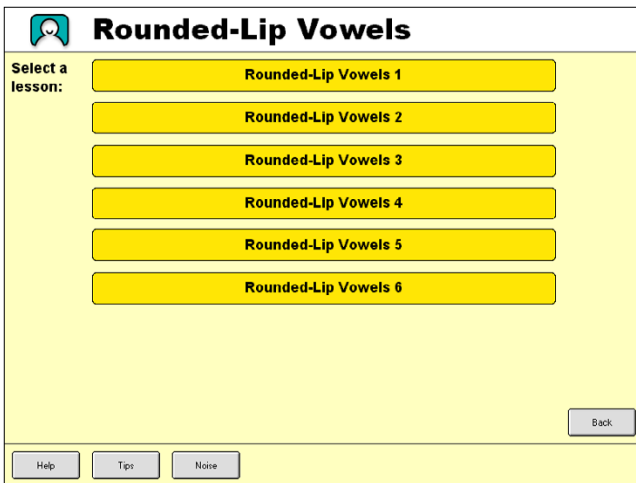The next screen you encounter, shown here, gives the six lesson subgroups within the Vowels group.
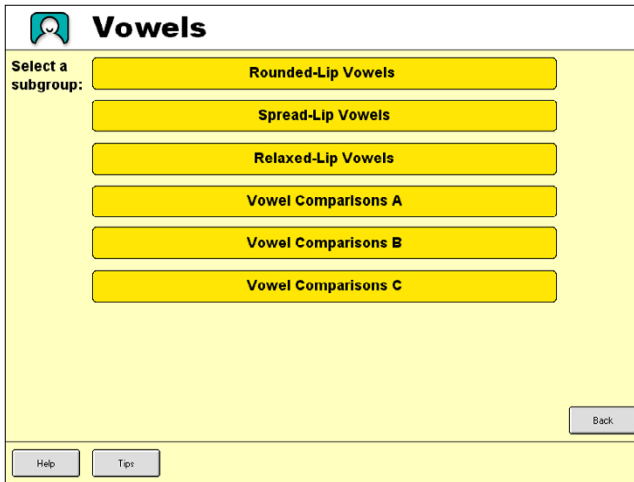


Click the first subgroup, Rounded-Lip Vowels, and you'll see the following screen, which provides information on this set of vowels.
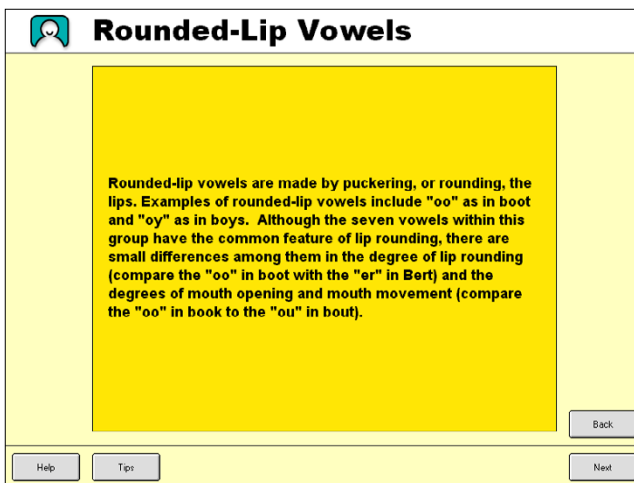


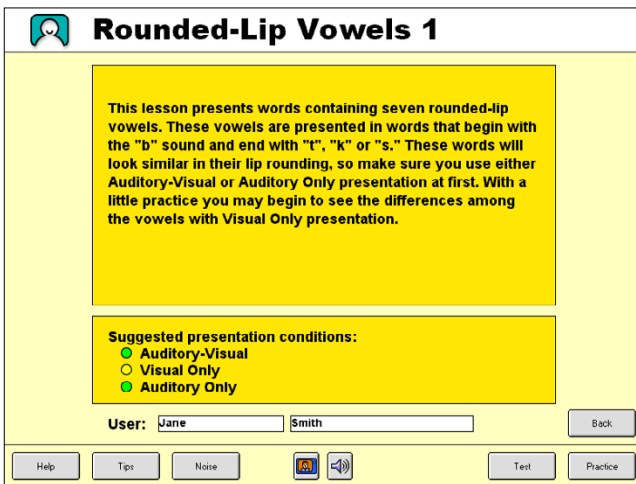Once you've read this, click Next to move to the next screen.

### *The Lesson Selection Screen*

This screen lists the six lessons available in the Rounded-Lip Vowels lesson group. The contents of these lessons can be seen by referring to the list of lessons in Appendix A.



Click Rounded-Lip Vowels 1 and you'll move to the screen shown here.



This screen provides you with information on the lesson that follows and also

makes recommendations about the three possible presentation conditions. For this particular lesson it is recommended (by a green circle) that you use either Auditory-Visual or Auditory Only presentation at first, and try Visual Only presentation after some practice (indicated by a yellow circle).

The user name currently in effect is shown here to let you check that it is correct. Test results gathered with this lesson will be stored under that user name. If the user name is not correct, you can change it by holding down the Ctrl key on your keyboard while also typing the letter "p". This will bring up the name-entry window so that you can enter another name. This Ctrl-p function is made available almost everywhere in the program as a way of checking and changing the current user name.

## Selecting Practice or Test Mode

To proceed to the lesson you must first decide how it will be conducted -- in practice mode or in test mode.

In practice mode, you control which item is presented. In addition, you can change the presentation condition and the background noise while the speech items are presented.

In test mode, the program selects the items to be presented. Also, you decide on the presentation condition and noise setting prior to the start of the lesson. In test mode, these selections cannot be changed after the lesson begins.

Let's try practice mode first. Click Practice and you'll see the lesson screen shown here.

## Using Practice Mode

There are quite a few buttons on this screen, some of which you will recognize and others that are new. Don't be intimidated by this layout -- it's really not very difficult.

Let's start by clicking the button labeled "boot". You should see and hear (if your hearing is good enough) a talker say that word. If you want the word presented again just click Repeat at the bottom of the screen. If you want to slow down the video to get a better look at the talker's lip movements, simply click Slowmotion and you'll see the word "boot" repeated in slow-motion. There is no sound with the slow-motion playback because it would sound very strange and wouldn't help you at all.
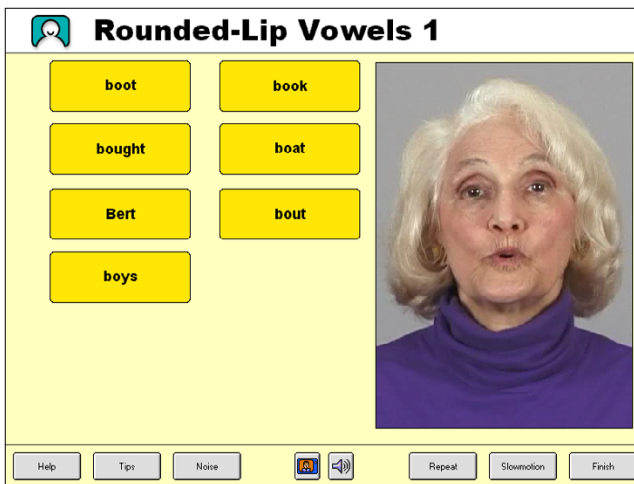


If you feel comfortable with the buttons so far, let's have a look at some of the other options. The Tips and Help buttons were explained with the Startup screen. Clicking Tips provides advice on a list of topics that is the same throughout the program. So if you click Tips here you will see the same list of tips that you saw when you clicked it in the Startup screen. Clicking Help will give you an explanation of the choices you have at the specific point where you are in the program. It explains what each button available to you at the time will do. The information Help provides, therefore, will be different at different points in the program because the choices will be different.

# Selecting Presentation Conditions

Centered at the bottom of the screen you can see two buttons.  One is a graphic icon of a person on a video screen and the other shows a loudspeaker. Click the video button and a red line will appear across it.  This indicates that the video is turned off and that when a word button is clicked there will be no video. This is how you select the Auditory-Only presentation condition. If you click the video button again, the red line will disappear and the video will again be presented.

The loudspeaker button works in a similar manner to turn the speech audio on and off. To select Visual Only presentation, turn the audio off and leave the video on.

Now you are familiar with the functions of these two buttons.
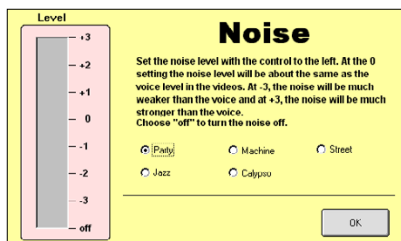
 Turns the video on and off

 Turns the speech audio on and off

## *Adding Noise*

The next button to look at is labeled Noise. Click Noise and this window will appear.

These controls allow you to add background noise to the speech sound that you hear in the lessons.



*Note: You can also have noise playing while the speech audio is turned off, though there is no point in doing so.*

### Selecting the type of noise

You have a choice of three actual noises - party noise, machine noise, and street noise - as well as two types of music-- jazz and calypso. Music is considered to be "noise" here because it can also interfere with speech understanding. You can select any one of the noise types by clicking the circle to the left of your choice.

### Setting the noise level

To turn on the noise, click in the gray rectangle next to the Noise scale at the left of the Noise window. The noise will start at the volume level at which you clicked. If the noise is too loud, reduce it by moving the cursor lower down on the noise scale (around -2 or -3) and clicking again. If you want the noise louder, click on a higher point on the noise scale. Just move the cursor up as high as you want and then click.  To turn off the noise, move the cursor to the bottom of the gray area marked "off" and click.

*Note: You will hear a brief gap in the noise every so often. This gap is supposed to be there and does not indicate a problem.*

Once you have selected the appropriate noise type and noise level, return to the lesson screen by clicking the OK button.

## *Controlling Volume*

At times you may want to make the speech audio less informative by making it weaker rather than by adding noise. The volume level of the sound from your loudspeakers can be controlled in one of two ways. The first, and simplest if available, is the volume control knob that is on most of the loudspeakers that come with personal computers.  Adjust it until the sound of the talker's voice is at the level you desire, which should be as low as possible to force yourself to lipread.

The second way to adjust volume is by using the computer's internal volume control. This control is found by clicking the small loudspeaker icon located in the task bar at the bottom of your computer screen. Clicking that icon brings up a slider with which you can adjust audio volume. Put the cursor on the small rectangular button, click down on the left mouse button and drag the slider in the direction in which you wish to change the volume. Then release the mouse button.

When you adjust your computer's volume control you will probably have to go back and forth to listen to the talker's voice and re-adjust the volume to get it where you want.

## *What have I learned so far?*

You've learned quite a lot. You know how to select practice mode and have become familiar with the buttons for that presentation.

*You also know how to:*

Select an item to be played
click the labeled button

Repeat the previous utterance
click Repeat

See the word presented at a slow rate
click Slowmotion

Turn off the sound for Visual Only presentation
click the loudspeaker button

Turn off the picture for Auditory Only presentation
click the video button

Select Auditory-Visual presentation
leave both the video and loudspeaker buttons unclicked

Adjust the volume
use either the volume control on your loudspeakers or your computer's internal volume control

Introduce background noise
click Noise

Select the type of noise used
click the adjacent circle

Set the level of the background noise
click the desired level

The final thing you need to know is how to exit from the lesson screen. To do so, simply click the Finish button in the bottom right-hand corner. You'll see that you have returned to the Rounded-Lip Vowels screen.  From there you can choose any of the lessons in that subgroup, or you can back up, by clicking Back (or pressing Esc), to go to the subgroup- or group-selection screens.

## Using Test Mode

Now that you've had a chance to use practice mode, you are probably interested in seeing how test mode works.   Assuming you are still at the Lesson Selection screen for Rounded-Lip Vowels, click Rounded-Lip Vowels 1 and you'll see the introductory text screen again.

You've seen this screen before, but last time you selected Practice. This time, try test mode.

**Rounded-Lip Vowels 1**

This lesson presents words containing seven rounded-lip vowels. These vowels are presented in words that begin with the "b" sound and end with "t", "k" or "s." These words will look similar in their lip rounding, so make sure you use either Auditory-Visual or Auditory Only presentation at first. With a little practice you may begin to see the differences among the vowels with Visual Only presentation.

Suggested presentation conditions:
- Auditory-Visual
- Visual Only
- Auditory Only

User: Jane    Smith                Back

Help    Tips    Noise            Test    Practice

Click Test and you'll move to the lesson screen seen here.



This screen looks exactly the same as the screen you saw for the practice mode except that the Noise button and the audio and video on/off icons at the bottom of the screen are faded out, indicating that these controls cannot be used. It is important to remember that when a lesson is used in Test Mode these items - the noise, and the auditory and visual presentation conditions - must be chosen prior to entering the lesson. They cannot be changed after you enter the lesson. If you want to change them, click Finish, and re-select the lesson, and then adjust them as desired on the lesson setup screen.

You may have already noticed the other important difference between test and practice modes. When you entered the lesson you may have heard or seen the talker speaking one of the seven words in this lesson before you clicked a button. That is because in test mode the program controls the presentation of the items and you respond, clicking the button that you think is associated with that item. If you think you know which item was spoken by the talker at the start of the lesson, click that button. If you want to have it presented again, click Repeat. Repeat it as many times as you like and have it presented in slow-motion if you like. But eventually you must give an answer by clicking the word that you think was spoken. Seeing and Hearing Speech will

then tell you whether that answer was correct or incorrect.

*Note: There is a brief time after presentation of a speech item when the program does not respond to button clicks. Repeat your click if the first one did not register.*
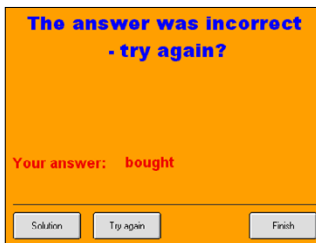
## Correct?

If your response was correct, this window will appear on the screen.



You can then click Next item to have another word presented for identification. Alternatively, you can click Repeat to see the word again. This is a useful thing to do if you were unsure about your response the first time. You can have the word presented again just to check how it looks and sounds. There is a Finish button on the screen as well, but don't click it until you want to finish the lesson.
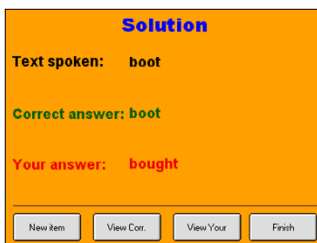
## Incorrect?

If your response was incorrect you'll see this window.



Again, you are shown the answer you gave and are offered two options, in addition to Finish. If you want to see the word again, click Try again and the presentation will be repeated. If your response is still incorrect, don't worry.

You can repeat this procedure as many times as you like. If you want to see the correct answer, however, click Solution and you'll see this window.



You now have three possible options - four if you decide you've had enough and choose to Finish.

### New item
click this button and you'll get a new word to identify.

### View Corr.
click this button to have the correct word presented again.
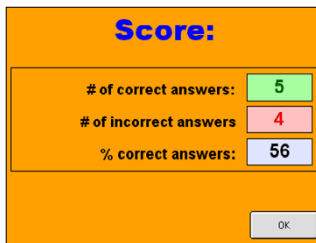
### View Your
click this button and the word you selected (incorrectly) as your response will be presented. This window will then return to offer you the same options.

View Corr. and View Your are useful options because they allow you to compare the correct utterance with the one you thought was spoken. Over time this can help you pick up differences between words. When you make a mistake it's a good idea to take advantage of these options so that you can compare and contrast the two alternatives.

You should take a little time to become familiar with these various options. If you are able to get all of the answers correct, you might have to "cheat" a little to see the various options. If you have to, make a few "mistakes" so that you can work with the Incorrect Response window.

How do I finish?

When you feel that you've done enough of a particular lesson, you can finish by clicking Finish. You'll find this button in the Correct, Incorrect, and Solution windows, as well as on the main lesson screen. After you click Finish you'll see a new window that gives you a summary of your performance with this particular lesson. An example is given below.



In this case nine words were presented, five of them were identified correctly and four incorrectly. The resulting score is therefore 56% correct. This score will be stored under the user name in effect at the time of the test.

The score that is calculated is based on the first response for a particular item. You may ask for a repeat after your first response and then identify the word correctly the second time, but this selection will not be used in calculating your score. For example, suppose the word presented is "bought" and you click the word "boot." You are then presented with the window informing you that the response was incorrect. You choose "Try again" and this time identify the word correctly. Because Seeing and Hearing Speech only counts the first response, the response to this item will be scored as incorrect. Note also, however, that you can ask for a repeat using the Repeat button on the lesson screen as many times as you like prior to responding.

Once you've seen your score you can then click OK and you'll be returned to the Lesson Selection screen for Rounded-Lip Vowels. There you can choose a lesson from that set or go back up to choose other lessons. For example, if you decided that you wanted to switch to Consonants, you would click Back repeatedly until you were at the Contents screen.

Over time you will become more and more familiar with the buttons that allow you to go forwards and backwards through the program. Don't worry if you make an error in navigation every now and then; it happens to everyone. Relax and enjoy Seeing and Hearing Speech and let it help you develop better speech recognition skills.

### How do I exit Seeing and Hearing Speech?

To exit the program, click Back repeatedly until you are back at the Startup screen, and then click Exit.

## Types of Lessons

This Chapter has used one lesson from the Vowels group as an example, but there are many other lesson types, both within the Vowels group and in the other groups. All of the lessons are listed in Appendix A. The lesson chosen as an example here is from the Vowels subgroup called Rounded-Lip Vowels. The vowels in this subgroup all have similar lip shapes and so are distinguished more by sound than by lipreading. The lessons within this group use words containing these vowels, with those words spoken in isolation, in short phrases, or in sentences.

Most of the lessons in the Vowels and Consonants groups follow this pattern. They focus on a group of speech sounds with similar lip shapes with those sounds presented in words, phrases and sentences. Other lessons in these groups will present comparisons of the sounds with different lip shapes, again in words, phrases, and sentences.

Lessons in the Stress, Intonation, and Length group focus on different ways that words and syllables can be emphasized. They present comparisons of pitch inflection, stress (emphasis or accent), and length of utterances.

The lessons in Everyday Communication are organized around various common situations or related words. There are lessons, for example, on numbers, addresses, and names, as well as common expressions used in restaurants and around the home. The next section presents guidelines for the use of these lessons.

# Chapter 4: Training Guidelines

## Order of Lessons

When a task is complex, as auditory-visual speech reception is, it is usually best to break it into its component parts and build up an understanding of the larger task from a mastery of the components. It is recommended, therefore, that you start your training with Vowels and Consonants. Practice with the word and phrase lessons before going on to sentences in each group. The Comparison lessons (e.g., Vowel Comparisons A) should be attempted after you have learned the sounds that are covered in that comparison. The lessons have been arranged in accordance with this approach so that you can simply proceed in the order in which they appear.

## Using Test and Practice Modes

For a given lesson it is best to work through it first in practice mode. This allows you to become familiar with the utterances and also to adjust the audio conditions (audio on/off, volume control, and background noise) so that the Auditory-Only task is neither too easy nor too difficult. After practicing you can go back up to the Lesson Selection screen to do the same lesson in test mode. Try this using Auditory Only presentation at first and then Auditory-Visual. Comparison of your scores under these two conditions allows you to gauge how much better you understand speech with lipreading than without it.

When you conduct a lesson in test mode, be sure to continue it for a number of trials. In order to get a good sample of all the items in the lesson, and to ensure reliable results, it is best to test for at least twenty trials. The more trials the better, but you should always try to have at least twenty trials in a test.

# Adjusting Presentation Conditions

Seeing and Hearing Speech is based on the idea that everyone has strengths and weaknesses in their ability to understand speech. Our aim is to have you build on those strengths and reduce those weaknesses. Quite often people differ in their ability to understand speech in the three possible presentation conditions - Auditory-Only, Visual-Only, and Auditory-Visual -- and this program provides the opportunity to practice in all of these conditions.

Some people are excellent lipreaders, while others have great difficulty understanding even the simplest items presented by vision only. The reasons why some people excel at lipreading, while others struggle, are not well understood. It is known, however, that the ability to lipread vowels is a good indication of an individual's overall lipreading abilities. For this reason we recommend that everyone using the program spend time practicing with the vowel items in the Visual Only condition.

People also vary greatly in their ability to understand speech through listening alone. Although an individual's auditory speech understanding skills are related to some extent to her/his degree and type of hearing loss, even people with identical hearing losses can vary greatly in their ability to understand speech via listening alone. You may find that some tasks are relatively easy to complete via listening alone while others are extremely difficult. For example, many people will find the Stress, Intonation and Length exercises relatively easy to complete in the Auditory Only condition, but experience great difficulty with many of the Consonant items. Take your time and work through each of the lessons in turn and see how well you are able to perform them.

Finally, the ability to combine the auditory and visual signals can vary a great deal from person to person. But, even if a person's auditory-only ability is low, listening can still make a large contribution to auditory-visual speech understanding. Auditory-visual speech scores are not simply the result of adding together a person's auditory-only and visual-only scores. For example, if a person scored 20% correct for a particular test presented via listening alone, and 20% when the same material was presented via lipreading alone,

he or she would almost certainly not score 40% correct when the test was re-administered auditory-visually, but rather 60 - 80% correct.  The benefits of combining the two signals exceed merely adding the two scores together.

Remember that the only way to discover your strengths and weaknesses is to experiment with the program.  Once you've found where you have problems you can practice with them in a particular presentation condition, or experiment with using the combined approach - listening plus looking - and see what effect this has on your performance.

## Suggestions

Here are some suggestions for using Seeing and Hearing Speech to enhance your communication skills.

1  Choose a condition that makes speech understanding difficult, but not impossible.  Don't put yourself in a situation where you have little or no chance of identifying the correct items.  If the task is too hard, try a different presentation condition.  Please don't sit there becoming more and more frustrated as you struggle to understand.  On the other hand, if you find that a particular lesson is too easy, try to make it more difficult by adding some background noise. Not too much initially.  It's better to raise the noise level little by little until you find a point where you experience challenge, but not failure.

2  It's best to familiarize yourself with the lesson and its materials auditory-visually before you move on to a more difficult condition such as Auditory-Only or Auditory-Visual in noise.  Don't rush this process.  Make sure you are comfortable with the lesson before you proceed to more difficult conditions.

3  We've provided color-coded guidelines at the start of each lesson which rank its difficulty in each presentation condition.  These represent a general "rule-of-thumb" and may not be accurate for all users of Seeing and Hear-

ing Speech, but please take notice of them to avoid unnecessary frustration. We've chosen the colors of traffic signals to describe the difficulty of each condition. The colors have been assigned the following meanings.

🔴 Stop! (Red Light)
> This material is not suitable for this presentation condition. If you do use it, expect considerable difficulty.

🟡 Proceed with caution. (Yellow Light)
> The materials in this lesson can be attempted in this training condition, but they may be difficult.

🟢 Proceed. (Green Light)
> The materials in this lesson are suitable for this presentation condition.

Here's an example to consider.

🔴 Visual Only (Red Light)

🟡 Auditory Only (Yellow Light)

🟢 Auditory-Visual (Green Light)

In this case we strongly suggest that you don't attempt this lesson with Visual Only presentation and have some reservations about attempting it Auditory Only. Our recommendation is that, at least initially, you should attempt this lesson with Auditory-Visual presentation.

If you see a stop signal for a particular presentation condition it means we have real misgivings about attempting this lesson in this way. For example, many of the consonant groups such as P-B-M have almost identical lip shapes and movements and are virtually impossible to tell apart via lipreading alone. This does not just apply to beginning lip readers. Even the best lipreaders cannot reliably differentiate between words such as "pit", "bit", and "mitt", or

"pay", "bay", and "may" when they are presented in isolation. Instead, in real life communication, they rely on the use of context and other language cues to identify the correct word. Here's an example. Is the missing word in each sentence "pay", "bay", or "may"?

Did you remember to _____ the bill?

My birthday is on the 4th of _____.

The boat sailed across the ____.

This is a rather easy test, but it should highlight how we can differentiate between words that are visually identical.

4  If you've worked through a lesson Auditory-Visually and scored more than 80% correct you should consider introducing some background noise to make the task more challenging. That's "more challenging" by the way, not "much harder." Try the task with a little noise and gradually increase its level if you are still able to understand most of the items correctly. Above all, take your time and don't rush into a situation which will lead to failure.

If you find the presence of background noise too disturbing there is another way of making the audio signal more difficult - turning down the volume. Although this will have the desired effect, it is not all that realistic. In every-day life people with a hearing loss should try to avoid this situation as much as possible. If someone is speaking to you in a voice that is too quiet you need to do something about it. Ask them -- politely of course -- to speak a little louder, or move closer to them so that you can hear better.

5  If you experience difficulty with any items in either the Visual-Only or Auditory-Visual conditions, remember that you have the option of using the Repeat or Slowmotion buttons. These will allow you to see the item again at either normal speed (Repeat) or in slow motion (Slowmotion). When you press the Slowmotion button you will see the video at a much slower rate, but you will not hear the speech. In the Auditory-Only condition you only have the option of the Repeat button, but this should be used any time you are unsure of your response or want to hear a particular item again.

6  The approach adopted in Seeing and Hearing Speech provides you with both auditory and visual information, but you should also consider how speech feels when it is produced.  In this case you become the speaker.  When you see or hear an item, it is a good idea to say it quietly to yourself and attend to what happens as you speak it.  Can you feel the lips move?  What about the tongue and jaw?  What does happen when you speak?  You can also observe yourself in a mirror and compare your visible lip movements with those of the speaker on your computer screen.  You might even want to mount a small mirror near your computer so that you can check on your own speech movements every now and then.  You should be trying to develop an awareness of speech and every cue, no matter how small, is going to help.

7  Finally, try to make sure that Seeing and Hearing Speech is only a part of your overall communication training.  Remember that the aim in the long term is to have better speech understanding in real life, so seek out communication in a variety of situations and with a variety of speakers.  Involve family members and friends in the process.  Let them see the program and encourage them to also produce some of the items and see how well you do when they are the speakers.  Above all, have fun, try to see everything in as positive a light as you can, and see mistakes as challenges to be overcome, not as insurmountable obstacles.

# Chapter 5: Viewing Results

**T**he results of lessons conducted in test mode are stored and can be recalled for later inspection. To view your results, go to the Startup screen and click Results, which brings up the Results screen, as shown here.
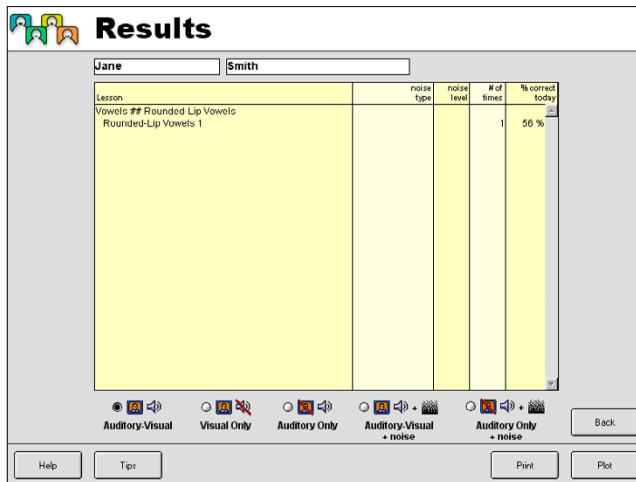


## The Results Screen

The top of the screen shows the user's name, and the results listed are those obtained by that user. [If you wish to see the results of a different user at this point you must go back to the Startup screen, type Ctrl-p (hold down the Ctrl key and type "p") and enter a new user name. Then return to Results.]

The central part of the Results screen is a list of the lessons that have been conducted in test mode. The lessons are sorted according to the presentation conditions that were in effect during testing. These conditions are selected and indicated by the icons below the table. When you first enter the Results window, the Auditory-Visual condition is selected, and the results for the lessons listed were obtained in that condition. You can list the results obtained under another condition by clicking the circle next to it. If the condition is one that involves noise, the results are also sorted by the type and level of noise used.

Also shown in the table are columns labeled "# of times" and "% correct today". Seeing and Hearing Speech combines the results from repetitions of the same lesson under the same conditions on the same day. Therefore, if you repeat a lesson with the same conditions on the same day, you will most likely see the entry under "% correct today" change after each duplicate run. However, the "# of times" entry will not increase because all runs of the same condition on the same day are combined into one. The "# of times" entry will increase only if a duplicate is run on a new day.

There are five buttons on the Results screen. You are already familiar with Help and Tips. Clicking Print will cause the Results screen currently displayed to be sent to your printer. The Back button takes you back to the Startup screen. The Plot button will bring up a graphic display of the results obtained over time on a selected lesson, under the selected conditions. Before you click Plot, however, you must select a lesson from the list. This is done by moving the cursor to one of the lessons in the list and clicking it. This will highlight that lesson. Now if you click Plot it will bring up the plot screen.

Two other commands that may be useful for some users allow saving and deleting results. If you wish to save the results of the current user, type Ctrl-s (hold down the Ctrl key while typing "s"). This will bring up a Windows Save dialog box with which you can specify the file name and location of the file into which the data will be saved. All of the results from the subject, under all presentation conditions, will be saved to this file. The file will be a tab-delimited text file suitable for importation into common spreadsheet programs.

If you wish to delete all of the results of the current user, type Ctrl-c (hold down the Ctrl key while typing "c"). You will be asked to confirm your decision to delete the results. If you click 'Ok" at this point all of the results from the current user will be deleted and cannot be recovered.

# The Plot Screen

This example shows the results of three tests on different dates with Rounded-Lip Vowels 1. The percentage of correct answers, with the date of each test is shown at the bottom.
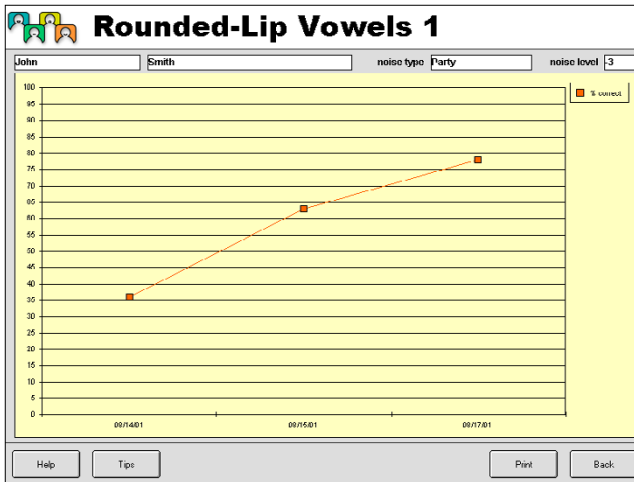


A printed record of these results can be made by clicking Print, which will send the plot to your printer. This printed record will have on it the user name and the presentation conditions and noise type and level. It provides a record of progress over time for that lesson under those conditions. When you are done plotting results, click Back to return to the Results screen. There you can either select another lesson for plotting, or return to the Startup screen.

# Chapter 6: Basics of Speech Communication

In order to learn how to maximize your use of visual and auditory cues for understanding speech, it is useful to appreciate some of the basic principles of face-to-face speech communication.

## Letters vs Sounds

The answers to questions such as "What's a vowel? and "What's a consonant?" are not as straightforward as they might seem.  When we are talking about our writing system we all know that there are five vowels -- a, e, i, o, and u -- while the remaining (21) letters are consonants.  Spoken language also has vowels and consonants, but they do not correspond exactly to the letters. There are, in fact, about fifteen vowels and twenty-four consonants in standard American English. In some cases the relation between letter and sound is simple. The letter "v", for example, is pronounced in only one way, and there is no other letter or combination of letters other than "v" that is pronounced like a "v". The letter "f" also has a unique pronunciation, but the letter combinations "ph", as in "phone", and sometimes "gh", as in "enough", are also pronounced as an "f". Then there are the letters -- the written vowels, especially -- that are pronounced in more than one way. As we know, vowels have long and short (and other) versions, as seen in the different pronunciations of the "a" in "fame", "fad", and "father". Combinations of vowels can be even worse. Consider the sentence "The rough, dough-faced plough boy was bothered by a cough" in which there are four different pronunciations of "ough".

The table on the following page lists words containing the 15 vowels sounds and the twenty-four consonant sounds of everyday American English. The organization of the table will be described shortly.

# Vowels

# Consonants

**Rounded**
ball
book
boot
bird
boat
bout
boil

**Spread**
beet
bit
bed
bake
bite

**Relaxed**
bad
bud
bob

P-B-M
pat
bat
mat

F-V
fine
vine

W-R
wear
rare

T-D-N-L-S-Z
toe
doe
no
low
so
zoe

TH
thin
that

CH-J-SH
cheap
jeep
sheep
mirage

K-G-NG-Y-H
kate
gate
sing
yam
ham

# Speech Sounds and Lip Shapes

When we speak we make sounds by moving our lips, jaw, and tongue in various ways while also vibrating the vocal cords and stopping the flow of air at appropriate times.  Generally, vowels are made with the mouth open to varying degrees, while consonants are made either by completely or partially restricting the airflow with the lips or tongue.

Some speech movements are easily visible, some are partially visible, and some are never visible. The shape of the lips and the extent of mouth opening are highly visible and are the main features involved in lipreading. Depending on the talker's speaking habits, tongue movements may or may not be visible, or may be visible for some speech sounds but not others. Vocal cord vibration, unfortunately, is never visible.

The vowels and consonants in Table I are clustered according to their similarity in visible lip shapes.  The consonants "f" and "v" serve as examples of how this clustering is done. The "f" and "v" sounds are both made by placing the lower lip in contact with the upper front teeth and expelling air. The difference between them is that the vocal cords vibrate for a "v" but not for an "f". That difference can be heard but not seen, however, and the fact that the "f" and "v" sounds have identical lip shapes makes it impossible to differentiate between them by lipreading. It is possible, however, to distinguish an "f" or a "v" from all other lip shapes.

The key to using lipreading to help you understand speech is to be able to recognize the lip shapes associated with the different speech sounds. Putting this visible information together with the cues you receive from hearing allows you to identify the utterance better than you could with hearing alone.

Many of the lessons in Seeing and Hearing Speech involve recognizing either vowels or consonants.  The organization of the items in the lessons follows the visually-similar clusters of the table on page 42. All of the clusters are represented in individual lesson groups, except for the TH cluster.  That cluster, like the F-V cluster, has two members that are differentiated by (invisible) vocal cord vibration. Fortunately, however, there are very few words in Eng-

lish that differ solely in the presence or absence of vocal cord vibration with the TH sound (as "fine" and "vine" do for the FV cluster). Another speech sound that has been intentionally omitted is the sound of the "g" in "mirage", which shares its lip shape with the others in the CH-J-SH cluster. Aside from appearing in that word and a few others (e.g., the "z" in "azure" and the "s" in "measure" and "pleasure"), it is a relatively rare speech sound.

Following is a description of the visible lip formations for each of the clusters. It might help you learn these shapes if you look in a mirror while producing the speech sounds.

Rounded. Rounded-lip vowels are made by puckering, or rounding, the lips. Examples of rounded-lip vowels include "oo" as in "boot" and "oy" as in "boys." Although the seven vowels within this group have the common feature of lip rounding, there are small differences among them in the degree of lip rounding (compare the "oo" in "boot" with the "er" in "Bert") and the degrees of mouth opening and mouth movement (compare the "oo" in "book" to the "ou" in "bout").

Spread. Spread-lip vowels are produced by spreading the lips as in a slight smile. Examples of spread-lip vowels include "ee" as in "beet" and "ai" as in bait. Although the vowels within this group tend to look similar on the lips, small differences among them may be noticed in the degree of lip spreading (compare the "ee" in "beet" to the "e" in "bet") and the degrees of mouth opening and mouth movement (compare the "ee" in "beet" with the "i" in "bite").

Relaxed. Relaxed-lip vowels are made with the lips in a neutral formation, neither rounded nor spread. Examples of relaxed-lip vowels include the "u" as in "cut" and the "o" as in "cot". Though the vowels within this group will look similar, small differences among them may be noticed in the degree of lip spreading (compare the "a" in "cat" to the "u" in "cut") and in the degrees of mouth opening and mouth movement (compare the "o" in "cot" to the "a" in "cat").

P-B-M. The consonants "p", "b", and "m" are formed by bringing the lips together to form a tight seal, and then releasing the seal abruptly.

F-V. The consonants "f" and "v" are formed by bringing the lower lip into contact with the upper front teeth.

W-R. These two consonants are produced with rounded lip shapes.

T-D-N-L-S-Z. Each of the consonants in this group is formed by placing the tongue just behind the upper front teeth. The lips are in a neutral position, with a slight mouth opening.

TH. These two consonants are formed by contacting the tongue to the upper teeth, often with visible protrusion of the tip of the tongue.

CH-J-SH. These consonants are formed by closing the jaw almost completely and placing the tongue in contact with the area just behind the inner gum line of the upper front teeth. They also exhibit a lip protrusion.

K-G-NG-Y-H. These consonants are produced with a moderately open mouth and with tongue movements inside the mouth that are usually difficult to see.

## Stress, Intonation, and Length

There are several important characteristics of speech beyond the actual vowels and consonants that convey information about the message. The pitch, or intonation, of the voice is one such characteristic. We make voice pitch rise towards the end of a question and fall towards the end of a statement. Two other such characteristics -- intensity and duration -- along with intonation, signal that a syllable or word is "accented" or "stressed". For example, the difference between the pronunciation of the word "rebel" as a noun (RE-bel) and as a verb (re-BEL) is made by speaking the accented syllable with greater intensity, longer duration, and slightly higher pitch.

Some of these cues, such as pitch and intensity, are primarily auditory. The duration for which a visible lip pattern is held, however, can often be clearly discerned. Talkers will also use facial gestures to varying degrees in expressing stress or asking a question.

Another type of cue that can be useful in lipreading is the pattern of visible mouth openings. This pattern arises from the fact that speech exhibits a clear alternation between vowels and consonants (or clusters of consonants, such as the "str" in "string"). We usually think of this pattern in terms of syllables, which consist of a vowel sound and one or more neighboring consonants. Because vowels are made with the mouth fairly open, and consonants with the mouth more closed, the vowel/consonant alternation results in a visible open/closed pattern of mouth openings that follows the syllables. Thus, it is possible to track the syllables, and even count them, by following mouth openings.

It is sometimes possible to use the pattern of mouth openings to obtain a clue about a spoken utterance. For example, suppose you ask a young child which sport she likes more -- baseball or basketball. By watching the number of times her mouth opens and counting the syllables - two or three - you might be able to understand her response without hearing it.

## Use of Context

The word "context" here means an awareness of the situation in which you are communicating that allows you to anticipate what someone might say to you. People don't often say things that are completely unexpected. There is usually some background or circumstance that leads us to expect the kinds of things that might be said. When a waiter first approaches you after you are seated in a restaurant, for example, there are only a few things that he will very likely say.

It is, in fact, difficult to think of situations in which you have no expectations about what a person might say to you. This knowledge can help enormously in understanding what the person says and easing communication. If you'd

like a demonstration of the importance of knowing what might be said, try doing a lesson in test mode with Visual Only presentation without knowledge of the response alternatives. (You will need a partner who would both cover the item buttons so you cannot see them and enter your responses appropriately). Not having any knowledge of what might be said usually makes speech reception much more difficult than it is when the possibilities are known.

## Practical Communication Tips

There are a number of things that you should do that can help you make use of your lipreading and auditory skills for maximum communication effectiveness.

• Position yourself so that you have a good view of the talker's face.

• Make use of facial expressions. Raised eyebrows, smiles, eye gazes, and head and body movements all help to communicate a talker's message.

• If you lose track of the conversation, ask for clarification quickly. It will only get worse if you don't.

• If a person speaks too quickly, ask him or her to speak more slowly and clearly.

• Do not try to hide the fact that you have difficulty hearing.

# Appendix A: List of Lessons

## Vowels

### Rounded-Lip Vowels

1 Words
2 Phrases
3 Sentences
4 Words
5 Phrases
6 Sentences

### Spread-Lip Vowels

1 Words
2 Phrases
3 Sentences
4 Words
5 Phrases
6 Sentences

### Relaxed-Lip Vowels

1 Words
2 Phrases
3 Sentences
4 Words
5 Phrases
6 Sentences

### Vowel Comparisons A

1 Words
2 Phrases
3 Sentences

### Vowel Comparisons B

1 Words
2 Phrases
3 Sentences

### Vowel Comparisons C

1 Two-Syllable Words
2 Phrases
3 Sentences

# Consonants

### P-B-M

1 Words - Initial Consonant
2 Phrases- Initial Consonant
3 Sentences - Initial Consonant
4 Words - Final Consonant
5 Phrases- Final Consonant
6 Sentences - Final Consonant

### F-V

1 Words - Initial Consonant
2 Phrases- Initial Consonant
3 Sentences - Initial Consonant
4 Words- Final Consonant
5 Phrases- Final Consonant
6 Sentences - Final Consonant

### W-R

1 Words  - Initial Consonant
2 Phrases- Initial Consonant
3 Sentences - Initial Consonant

### Consonant Comparisons A

1 Words
2 Phrase
3 Missing-Word Sentences
4 Answer to Question

### T-D-N-L-S-Z

1 Words - Initial Consonant
2 Phrases- Initial Consonant
3 Sentences - Initial Consonant
4 Words - Final Consonant
5 Phrases- Final Consonant
6 Sentences - Final Consonant

### CH-J-SH

1 Words - Initial Consonant
2 Phrases- Initial Consonant
3 Sentences - Initial Consonant

### K-G-NG-H

1 Words - Initial Consonant
2 Phrases- Initial Consonant
3 Sentences - Initial Consonant
4 Words - Final Consonant
5 Phrases- Final Consonant
6 Sentences - Final Consonant

### Consonant Comparisons B

1 Words
2 Words
3 Sentences
4 Words
5 Words
6 Sentences

### Consonant Clusters

1 Words
2 Phrases
3 Sentences

# Stress, Intonation, And Length

## Word Stress

1 Three-Word Sentences
2 Four-Word Sentences
3 Nine-Word Sentence

## Intonation

1 Statements versus Questions: short sentences
2 Statements versus Questions: long sentences

## Word Stress and Intonation

1 Three-Word
2 Four-Word Sentences

## Syllabic Stress

1 Words
2 Sentences
3 Sentences

## Expansions

1 Children
2 Car
3 Flowers
4 Leaves

# Everyday Communication

## Numbers

1 Phrases
2 Answer to questions
3 Area codes
4 Zip codes
5 Birthdays
6 Individual Birthdays
7 Prices

## Names

1 Isolated first names
2 First names in phrases
3 First names in sentences
4 Isolated first names
5 First names in phrases
6 Spelled first names
7 Individual first names
8 Isolated last names - A
9 Isolated last names - B

## Places

1 U.S. city names in phrases
2 Individual cities
3 Foreign city names in phrases
4 Foreign city names in answer to questions

## Sentences Topics

1 Sentence Topics 1
2 Sentence Topics 2
3 Sentence Topics 3
4 Sentence Topics 4

## Common Phrases

1 Greetings
2 Simple questions
3 Weather
4 Filling in a form

## Related Words

1 Vegetable words
2 Fruit words
3 Restaurant words
4 Restaurant words in sentences
5 House words
6 House words in sentences

# Appendix B: Installation and Setup

## Installing Seeing and Hearing Speech

*Depending on your version of Windows, you may need to be logged in as an administrator to install and run Seeing and Hearing Speech.*

**1** Insert the Seeing and Hearing Speech CD-ROM into your CD-ROM/ DVD-ROM drive.

**2** The CD-ROM should automatically start the installation on most computers. Follow the on-screen installation instructions. *If the CD-ROM doesn't automatically start the installation, you may manually start the installation by double-clicking the "setup.exe" file on the Seeing and Hearing Speech CD-ROM.*

When installing on Windows 8, Windows 7, or Vista, please click "Allow" or "Yes" and enter an administrator password if prompted with any User Account Control windows.

**3** Once the Seeing and Hearing Speech installer finishes, the QuickTime installer will begin automatically. Please follow the onscreen instructions to complete the QuickTime installation.

## Running Seeing and Hearing Speech

Click on "Seeing and Hearing Speech" in the All Programs submenu of the Windows Start menu, or by double-clicking on the "Seeing and Hearing Speech" icon on your desktop.

*If you are installing Seeing and Hearing Speech on Windows Vista, please see the Vista Workaround Guide included in the Seeing and Hearing Speech package.*

*If you have trouble opening the SHS User's Guide from the Windows Start menu, please install Adobe Reader (included on the Seeing and Hearing Speech CD-ROM in the folder labeled "Adobe Reader").*

*The first time that you run Seeing and Hearing Speech, you may see this message "Svenska' language support not found. Will try English instead." Click the "OK" button to clear the message window.*

# Audio Setup

If you are unsure if the audio system on your computer is working, you can check it in the following way.

In Windows 8/7/Vista, right-click the speaker icon in the Taskbar Notification area (lower right of your screen) and select Sounds from the pop-up list. On the resulting window, set the Sound Scheme to Windows Default. Next, click on a sound with a loudspeaker icon next to it from the Program list, and click the Test button to play the sound.

In Windows XP, go to the Start menu, then select Control Panel, and then Sounds and Audio Devices. This will bring up a window with controls for the audio system. Select the Sounds tab and choose Windows Default for the Sound scheme. Then select one of the Program events with a loudspeaker next to it and click the play button (a small black triangle). You should hear a sound every time you click the button.

If you hear the test sounds that your computer presents, then Seeing And Hearing Speech will be able to present audio correctly. All that remains is to adjust the volume appropriately, which should be done on the basis of listening to the speech items. See Chapter 3 of this guide for further instructions on setting volume.

If you do not hear a test sound there are several possible reasons. The most likely reasons follow:
1 The loudspeakers are not properly connected to the computer.
2 Power to the loudspeakers is not turned on.
3 The volume control on the loudspeakers is set too low.
4 The computer's internal volume control is either too low or is muted (muting is controled by a check box in the volume control window.)

If there is still no sound after you are satisfied that the loudspeakers are connected and working and the internal volume control is not muted, then there may be a problem with the audio subsystem on your computer. This problem will have to be investigated by someone knowledgeable. Check with the store where your computer was purchased, or contact a computer repair technician.

# Video Setup

There are two video settings that are important for proper display of the video recordings in Seeing and Hearing Speech. These are called the Colors and Screen Resolution settings. They are accessed by first pulling up the Start menu, selecting Control Panel. In Widows 8, Windows 7, or Vista, select Personalization, and then Display Settings. You will see controls on the Display Settings/Settings window for Colors and (Screen) Resolution. In XP, in the Control Panel, double click the icon labeled Display. In the resulting Display Properties select the tab labeled Settings.

For proper execution of the program, the Colors (or Color Quality) selection should be set to 32bit or 24bit Color (or Highest). If only 16bit (Medium) is available, the program will still run, but the video quality will not be as high as with 24-bit or 32-bit color.

Seeing and Hearing Speech will work with any (Screen) Resolution setting that is 800 x 600 or greater. However, there are pluses and minuses to your selection that you should know about.

A (Screen) Resolution setting of 800 x 600 pixels will display the program at it's largest size (it will fill the screen). A large display is good if your eyes need it. When running the program at 800 x 600 pixels, you will see neither the usual title bar at the top of the screen (with its minimize and maximize buttons) nor the task bar at the bottom of the screen.

A (Screen) Resolution of 1024 x 768 results in a display that is 28% smaller than the 800 x 600 display, but for most people it will be visually satisfactory. With that (Screen) Resolution setting on Windows computers you will be able to see and use the title bar and the task bar. You will also be able to switch to other programs by clicking on them in the background because the program screen for Seeing and Hearing Speech will not occupy the entire area on your monitor.

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**Seeing and Hearing Speech** exploits the multimedia capabilities of personal computers to allow you to learn and practice lipreading at home and at your own pace. This new interactive CD-ROM from Sensimetrics Corporation contains carefully planned lessons that help you combine what you see with what you hear to understand speech better. Seeing and Hearing Speech uses the latest multimedia technology and computer-aided learning techniques to provide extensive, convenient lipreading training on Windows computers.
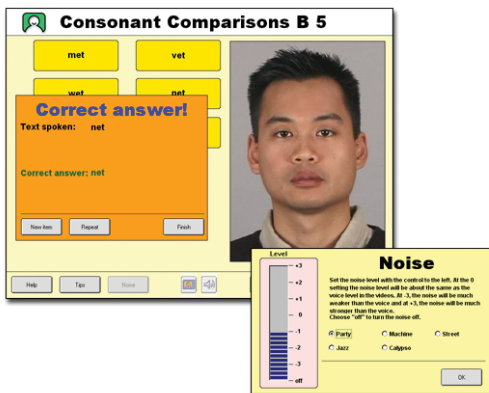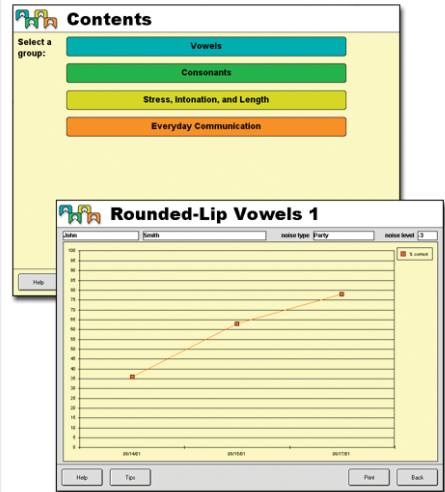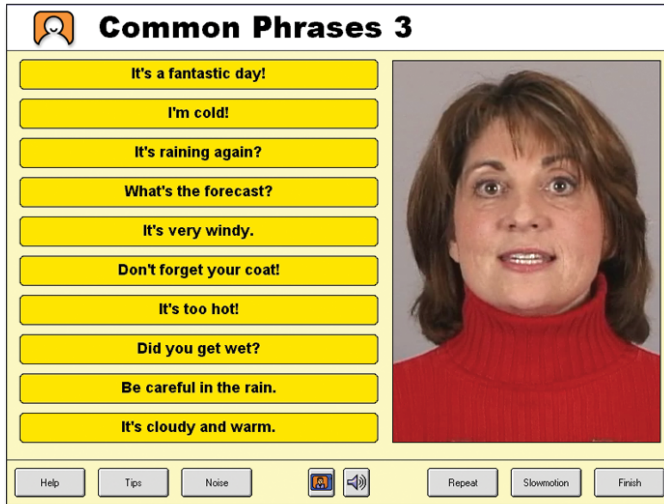


## Improve Your Speech Understanding Using...

• Eleven different talkers presented in over 1200 high quality digital videos with sound

• Interactive training in either practice or test mode, with storage and display of test results

• Background noise or music for realistic listening conditions

• Carefully selected and organized speech material with plentiful guidance for self-study

### Windows® System Requirements
• Intel® Pentium® III or faster processor
• Microsoft® Windows XP/Vista/7/8
• 256 MB or more of RAM
• 500 MB of available hard disk space
• CD-ROM/DVD-ROM drive

# SENSIMETRICS
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