TOVA

Test of Variables of Attention®

T.O.V.A. 8.3 USER'S MANUAL

T.O.V.A.® 8.3 User's Manual

Test Of Variables of Attention Continuous Performance Test

Contents

Important Information

1   Indications

The Test of Variables of Attention (T.O.V.A.) version 8 provides users with objective measurements of attention and inhibitory control. The T.O.V.A. version 8 is not an FDA-cleared medical device. Please contact The TOVA Company (see section 26 on page 78) for more information.

2   Contraindications

The T.O.V.A. microswitch and USB device should not be used in conjunction with an MRI.

3   Warnings and Precautions

The T.O.V.A. provides objective measures of attention and inhibitory control. The T.O.V.A. does not diagnose any disease or disorder or make a recommendation of treatment. T.O.V.A. performance should always be considered in the context of all available clinical information and should only be interpreted by a qualified professional.

WARNING: Repetitive flashing of display may cause eye strain, headaches, or seizures. Please seek medical help if you experience any eye strain or headache.

The T.O.V.A. microswitch is a Type B Applied Part, i.e., a part of the system meant to be handled by the subject. The T.O.V.A. USB device and associated cables are not applied parts, and are not meant to be handled by the subject.

The T.O.V.A. can only be connected via the USB connector: Only connect the USB input to equipment that is certified to UL 60950-1 and IEC 60950-1.

The T.O.V.A. microswitch should be cleaned in between subjects. See section 6 on page 3 for directions.

The T.O.V.A. is designed to be stored, operated and transported in a standard indoor environment: a temperature of 10 to 40 °C (50 to 104 °F), 0 to 100% relative humidity, and an atmospheric pressure of 64.4 to 106.6 kPa.

T.O.V.A. results should be interpreted only by qualified professionals.

Do not interrupt the T.O.V.A. test while it's being administered. Selecting **Esc** will result in the test being interrupted.

Do not open the T.O.V.A. hardware enclosures; there are no user serviceable parts inside the T.O.V.A. hardware.

Do not unplug the T.O.V.A. hardware when in use (during a test). This will result in lost session data.

Always make sure that your PC is plugged into a power outlet during Session mode. A low battery during a test session may cause the test data to be lost.

Caution: If a new display or new PC is used, the display must be recalibrated prior to administration of

the T.O.V.A. test.

The T.O.V.A. Precision Test Environment does not support the use of multiple monitors/screens.

The T.O.V.A. 8.3 does not support network share databases. **Storing data on a server or network share will most likely result in lost data.** Please only use the T.O.V.A. with a local database.

We always recommend that you back up your T.O.V.A. database before installing or uninstalling the T.O.V.A. Automatic local database backups are built into the T.O.V.A. application and enabled by default, but we recommend that you also regularly back up your database (and the rest of your PC) to a secure location.

Warning: The surface of the T.O.V.A. microswitch may become hot (41 °C / 106 °F) during use. Discontinue use if holding the switch becomes uncomfortable.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with IEC 60601-1-2. These limits are designed to provide reasonable protection against harmful interference in a typical installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.

- Increase the separation between the equipment.

- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.

- Consult the manufacturer or field service technician for help.

4   Information Security for T.O.V.A. Computers

The T.O.V.A. database may contain private or personal Protected Health Information (PHI). While the T.O.V.A. accommodates the need to protect PHI, the T.O.V.A. application does not secure or encrypt the database itself. Instead, you can secure access to the T.O.V.A. database and backup folders within your OS (Windows or macOS)—just be sure that all *authorized* users of the T.O.V.A. have full permissions on the system to the database folder and its subfolders.

We also expect users will follow information security best practices on the host PC, among which are these:

- Use separate user and admin accounts.

- Use strong passwords.

- Lock the computer after a few minutes of inactivity.

- Control physical access to your T.O.V.A. PC.

- Keep T.O.V.A. software up to date.

- Back up your PC regularly and store your backups securely.

- If your T.O.V.A. system is online, keep your OS up to date. Use internet security software to prevent malware infections.

The T.O.V.A. uses SSL to secure any communication with our servers that might contain personal information, and no PHI is collected without your consent. Any information on our servers is securely maintained.

5   T.O.V.A. Description

The Test of Variables of Attention (T.O.V.A.) is an accurate and objective continuous performance test (CPT) that measures the key components of attention and inhibitory control. The T.O.V.A. version 8 is not an FDA-cleared medical device. Please contact The TOVA Company (see section 26 on page 78) for more information.

The T.O.V.A. is a culture- and language-free, sufficiently long computerized test that requires no left/right discrimination or sequencing. Responses to visual or auditory stimuli are recorded with a specially designed, highly accurate (± 1 ms) microswitch. The T.O.V.A. calculates response time variability (consistency), response time (speed), commissions (impulsivity), and omissions (focus and vigilance). These calculations are then compared to a large age- and gender-matched normative sample (over 1,700 individuals for the visual test, and over 2,600 individuals for the auditory test), as well as to a sample population of individuals independently diagnosed with ADHD. These comparison results are used to create an immediately available, easy-to-read report.

The T.O.V.A. system includes:

- USB flash drive with software installer for Mac and Windows PCs.

- T.O.V.A. USB device

- T.O.V.A. microswitch

- Installation Guide

- User's Manual

- Accessory cables (USB, VGA, and audio cables)

6   Cleaning instructions

6.1   The T.O.V.A. Microswitch

Because the T.O.V.A. microswitch comes in direct contact with a patient, it should be cleaned after every use.

- **Do**

  - Clean the microswitch casing after every use.

- Use a low-level disinfectant on a soft, lint-free cloth. Examples of low-level disinfectants include 70% or greater isopropyl alcohol, 10% bleach solution, or various commercial disinfectant wipes.

- **Do NOT**

    - Do not immerse in or spray the microswitch with a liquid.
    - Do not use abrasive cleaners.

6.2   The T.O.V.A. USB device

The T.O.V.A. USB device and all associated cabling do not require cleaning. If you wish to clean it, please follow these instructions.

- **Do**

    - Use a mild cleaning solution on a soft, lint-free cloth

- **Do NOT**

    - Do not immerse in or spray the T.O.V.A. USB device with a liquid.
    - Do not use abrasive cleaners.

Getting Started

Welcome to the T.O.V.A. 8.3 User's Manual. Feel free to jump right in and install the T.O.V.A. by skipping to **"Installing the T.O.V.A."** (section 8.12 on page 10), but we've included this section in case you're not familiar with the T.O.V.A. We'll tell you a bit about the T.O.V.A. and answer some common questions about it.

7   About This Manual

This manual is the T.O.V.A. version 8.3 User's Manual. It is meant to help you with all things technological about the T.O.V.A.

- Getting started with the T.O.V.A. 8.3

- Installing and uninstalling the T.O.V.A.

- A guide to using the T.O.V.A. on your operating system (OS)

- A reference manual about the T.O.V.A. software and hardware

There are other manuals that may help you.

- The **Installation Guide** can help you set up the T.O.V.A. software and hardware.

- The **Sync Interface Manual** explains how to use the T.O.V.A. Synchronization Interface (sold separately).

- There is also a **Professional Manual**, which describes the internal guts of the T.O.V.A. from a test construction and statistical point of view.

8   About the T.O.V.A.

8.1   What is the T.O.V.A.?

See the T.O.V.A. device description (section 5 on page 3).

8.2   Who uses the T.O.V.A.?

The T.O.V.A. 8.3 is used by researchers interested in objective measurements of attention and inhibitory control.

8.3   What makes the T.O.V.A. unique?

- The T.O.V.A. has a standardized computer-game-like format and is easily administered.

- Any personnel can be trained to administer the test.

- Its reports are immediately available and easy-to-read.

- It measures both visual and auditory information processing, yet in separate tests to clearly identify processing deficits.

- The visual T.O.V.A. is extensively normed for both children and adults (ages 4 to 80+).

- The auditory T.O.V.A. is normed for children and adults (ages 5.5 to 29+).

- It precisely measures response times (±1 ms)

- It is language and culture free.

For more information, please see our website at http://www.tovatest.com/.

8.4   How does the T.O.V.A. test work?

It's quite simple: the visual test flashes stimuli on the screen (or the auditory test beeps stimuli on speakers), and the subject taking the test responds as quickly and as accurately as they can with a small handheld microswitch. This kind of 'stimulus and response' test is called a continuous performance test (CPT), and the T.O.V.A. is one of many on the market—the best, we believe!

Both the auditory and visual tests are 21.6 minutes long. (A shorter 10.8-minute visual T.O.V.A. test is administered to subjects ages 4 to 5.5.) The visual test has two simple images that alternately flash on the screen, and the subject presses the button after the correct square. The auditory test has two tones, and the subject presses the button after the higher tone. Both tests are horribly, terribly, inhumanly boring. But this is a *good* thing because you just can't fake it with the T.O.V.A.

The T.O.V.A. takes the subject's responses and compares them to a study with thousands of 'normal' people—that is, people who were screened for attention (and other disorders) and were deemed normal. This is called the T.O.V.A. norming study, and it allows us to figure out where the subject's responses fall on the 'bell curve' of normal. It is critical that the number of people in a norming study is large, and the T.O.V.A. still has the largest norming study of any CPT. The T.O.V.A. also compares the subject's responses to a study of people diagnosed with ADHD.

These comparisons are not diagnoses! Only a clinician can make a diagnosis. The T.O.V.A. simply *aids* the clinician with their assessment of attention deficits.

8.5   What does the T.O.V.A. measure?

The T.O.V.A. measures attentional variables—that is, it measures how people respond to a long, boring test. There are over 250 peer-reviewed papers on the T.O.V.A. that show how these variables correspond to attention deficits, and how the T.O.V.A. can be used. See the T.O.V.A. website (http://www.tovatest.com/) for a list of papers published about or using the T.O.V.A.

In particular, the T.O.V.A. measures these variables (listed in order of importance):

Response Time Variability: How consistently (or not) a subject responded to the T.O.V.A. stimuli. People without attention deficits respond to the stimuli very consistently, and those who do have an attention deficit tend to not be as consistent.

Response Time: People with attention deficits tend to respond to stimuli slower than normals.

Commissions: People with attention deficits tend to make more errors of impulsivity, pressing the button when they shouldn't.

Omissions: Most people don't actually miss any stimuli, although omissions do tend to be higher for those with attention deficits.

8.6   What's all this about precision timing?

Because response times, and even more importantly, the variability of response times, are the core of any CPT, the T.O.V.A. was designed with very high timing accuracy. Although people respond to stimuli in hundreds of milliseconds, the consistency of response times can be only *tens* of milliseconds. And because that's the most sensitive variable in a CPT, it's crucial that the response timing on a CPT be precise—and reliable.

We like to say that the T.O.V.A. has 'research-grade' timing accuracy, because our timing is just that good. But what's *just as important* is that the timing is *reliable.* And so we go out of our way to make sure the T.O.V.A. is a reliable test.

Unfortunately, modern operating systems like Windows, macOS, and most flavors of Linux don't guarantee reliability when it comes to timing. In fact, they do the opposite: they guarantee that eventually they will introduce latencies and variable delays in timing. Modern operating systems have been designed from the ground up to be reasonably fast for users' demands, but not to be *reliably and consistently* fast. Have you ever seen your computer hesitate just a split second before it does what you asked it to do? Happens all the time, right? That hesitation will make any CPT running on these operating systems unreliable.

We realize other people say you can still test in Windows or other modern operating systems, but they've never (to our knowledge) objectively measured their timing performance with an external timing validation system. We have. We've measured timing reliability under Windows (and Mac OS X), and it stinks.

So how do we get around this timing issue?

The T.O.V.A. 8.3 has two ways of resolving this:

External Audio/Video (EAV) session - The T.O.V.A. 8.3 allows you to run a T.O.V.A. test *in your OS*, because the timing is managed with precision by the T.O.V.A. hardware. Attach the T.O.V.A. USB device to an external monitor and speakers, and you'll never have to reboot to run a test!

Precision Test Environment (PTE) session - The T.O.V.A. reboots to the Precision Test Environment, where you administer the T.O.V.A. test, and then reboots you back to your OS. For many users (for instance, using a laptop without an external monitor), rebooting to the PTE will still be the best solution. See section 31 on page 103 for more information.

8.7   Why do you charge per test?

We charge per test because we care that you have the very latest in tools to help you improve people's lives. This may sound like advertising, but we truly do believe it. Your clinical tools should be constantly improving as new research and new ideas comes down the pipeline, and the T.O.V.A. will do this.

So instead of charging you an arm and a leg for the T.O.V.A. and leaving you in the dust as it improves, we instead charge you per test and then give you new versions of the T.O.V.A. for free. Yes, for free. More norms? Free. Improved user interface? Free. New statistics? Free.

Note: There is a charge for the T.O.V.A. 8.3 hardware–please contact T.O.V.A. customer service for details (section 26 on page 78).

And we support you like no other testing company can: **technical support is free**. Whenever you have a question or problem with the T.O.V.A., contact us and we'll help you. We're crazy about supporting our users, so really don't hesitate to call us if you can't figure out something about the T.O.V.A.

And, even more importantly, **interpretation support is free**. This means we have staff whose job it is to help you interpret T.O.V.A. results. Wondering how to identify malingering? Do you need help understanding how comorbid disorders affect T.O.V.A. performance? Are you baffled by the results of your last subject? Call us! We'll help you understand it.

So in summary, our per-test charge allows us to provide you with an excellent, constantly evolving test of attention with full customer service. We think that's a pretty good deal.

8.8   What is the history of the T.O.V.A.?

The T.O.V.A. has its roots in a 1966 National Institute of Health-funded research project. The equipment that gave that CPT literally took up an entire wall. With the onset of the personal computer, it was ported to the Apple IIe (and called the VIRTEST), then the Macintosh, and finally to DOS and Windows PCs. The T.O.V.A. has over 40 years of ongoing research behind it.

8.9   T.O.V.A. 8.3 system requirements

- x86-64 processor running at 1 GHz or better

- 2 GB of memory available

- Minimum of 1 GB hard drive space

- USB Type A port (or Type C with an adapter)

- Screen size must be 10 inches or more.

- **External A/V testing** requires an external VGA display and external speakers.

8.9.1   Windows installation requirements

- Windows 7 (Service Pack 1), 8, 10, or 11

- **Note:** The new PTE improves compatibility with newer computers, but some systems may still require the EAV hardware setup (section 30 on page 102).

8.9.2   Macintosh installation requirements

- Any Intel-based Macintosh

- OS X 10.8.5 and higher

- PTE supported using the T.O.V.A. flash drive

- iMac users must use a USB keyboard or mouse (not a wireless keyboard) for the PTE setup.

8.10   What's in the T.O.V.A. 8.3 Kit?

The T.O.V.A. version 8 is no longer marketed or distributed by The TOVA Company. For more information about upgrading to the T.O.V.A. version 9, please see https://www.tovatest.com/store.

8.11   How do I use the T.O.V.A. 8.3?

We have a whole section about devoted to **Using the T.O.V.A.** (section 16 on page 29).

Here's where you can find answers to some other general questions:

How do I install the T.O.V.A. 8.3? See section 8.12 on page 10.

How do I administer a T.O.V.A. test? See section 17 on page 30.

How do I import my old T.O.V.A. data? See section 21 on page 53.

How do I view a report? See section 18 on page 41.

How do I order T.O.V.A. Test Credits? See section 19.1 on page 48.

How do I contact The TOVA Company? See section 26 on page 78.

8.12   Other questions?

See our **Frequently Asked Questions**, section 37 on page 139.

Between Stimulus and Response there is a space.
In that space is our power to choose that response.
In our response lies our growth and our freedom.
– Viktor Frankl

Installing the T.O.V.A.

In this part of this manual, we'll help you install the T.O.V.A. hardware and software.

> **Note: You will need to log in as an administrator to install the T.O.V.A. 8.3.** If you own your computer, then you most likely have administrative access to your computer. If your computer is part of a large organization and you have an IT staff that installs programs for you, you will probably want to contact them to install the T.O.V.A. 8.3. You can run the T.O.V.A. as a normal or limited user, but it can only be installed by an administrator.

Steps to Install the T.O.V.A. 8.3

1. **Please start by installing the software.** The instructions you follow will depend on the kind of computer you have:

   - **Installing the T.O.V.A. on Windows**? See section 9 on page 11.
   - **Installing the T.O.V.A. on Mac**? See section 10 on page 13.

2. Next, you should **configure the T.O.V.A.**: See section 11 on page 15.

3. After you've installed the software, **install the hardware**: See section 12 on page 17.

4. Finally, you can **test your hardware setup**: See section 13 on page 22.

5. In the event you ever have to remove the T.O.V.A. from your computer, we also provide 'uninstall' instructions here:

   - **Uninstalling the T.O.V.A. on Windows**? See section 14 on page 26.
   - **Uninstalling the T.O.V.A. on Mac**? See section 15 on page 27.

9   Installing the T.O.V.A. 8.3 on Windows

9.1   Starting the T.O.V.A. 8.3 installer

1. Please close any other applications that are running before installing the T.O.V.A., to make sure they do not conflict with the install of the T.O.V.A.

2. Plug the T.O.V.A. 8.3 flash drive into your USB port.

3. If you're prompted, open the flash drive.

4. If nothing happens when you plug in the flash drive:

   (a) Go to **This PC** or **My Computer**.
   (b) Open **TOVATEST**.

5. Run **T.O.V.A. 8.3 Setup for Windows**.

Figure 1: If you get a warning during install, please choose **Allow**.

Note: During or after install, your system's firewall or antivirus software may alert you to changes we are making to your system. If we don't make these changes, the T.O.V.A. may not function correctly. When asked, please choose **Allow**, **Unblock**, or whatever allows the installer to proceed.

9.2 The T.O.V.A. Windows Installer
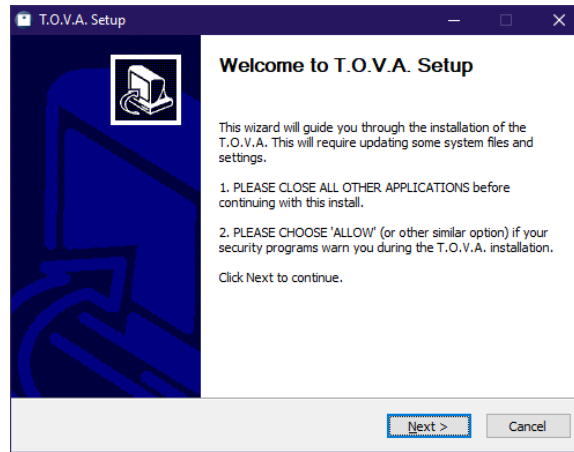
Figure 2: A T.O.V.A. installer welcome page

Once you see the Welcome page (Figure 2), the installation has begun.

1. Click **Next**, and the license agreement will appear. Choose **I accept** to agree to our license and then click **Next**. Otherwise, click **Cancel** to not install the T.O.V.A. software, and then please give us a call; we'd love to know why you don't agree with it.

2. If prompted, please click **Next** to accept the default destination.

3. The installation should only take a minute or so on most computers. When the installation finishes, you'll notice that **Configure T.O.V.A. preferences** is checked by default (Figure 3). Leave it selected and click **Finish** to configure the T.O.V.A. 8.3 software for this system (section 11 on page 15).
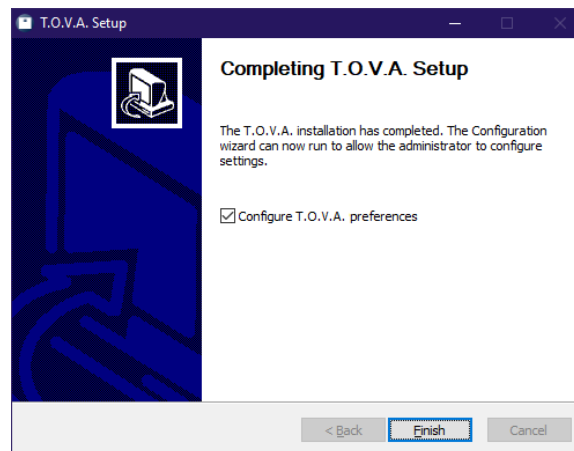
Figure 3: T.O.V.A. 8.3 installer is finished!

10 Installing the T.O.V.A. 8.3 on Macintosh

10.1 Starting the T.O.V.A. 8.3 installer

1. Please close any other applications that are running before installing the T.O.V.A., to make sure they do not conflict with the install of the T.O.V.A.

2. Plug the T.O.V.A. 8.3 flash drive into your USB port.

3. Double-click on **T.O.V.A. Installer for Mac**.

4. On macOS 10.15 or later, the installer may not run the first time. If so, open **Apple System Preferences**, go to **Security & Privacy**, click the **General** tab, and then click the button **Open anyway**. When prompted, enter your password to authorize.

10.2 The T.O.V.A. 8.3 installer

1. First, the installer will check whether your system meets the minimum system requirements for running the T.O.V.A. 8.3. Click **Continue**.
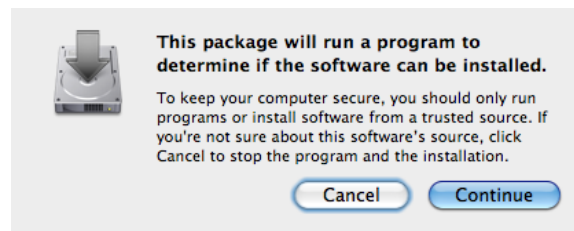
Figure 4: The T.O.V.A. 8.3 system check dialog

2. Once you see the Introduction page (Figure 5), the installation has begun. Click **Continue**.
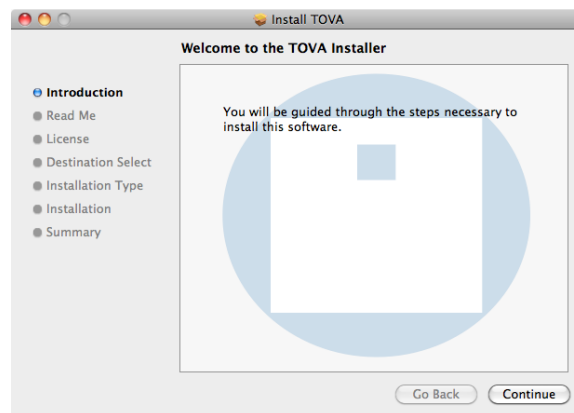
Figure 5: The T.O.V.A. 8.3 installer Introduction page

3. Next, you will see the release notes for the current version. Click **Continue**.

4. When the software license agreement for the T.O.V.A. 8.3 appears, please read the agreement, click **Continue**, and then click **Agree** to proceed with installation.

5. The next screen shows how much space will be taken by the installation and is the final confirmation before installation takes place.
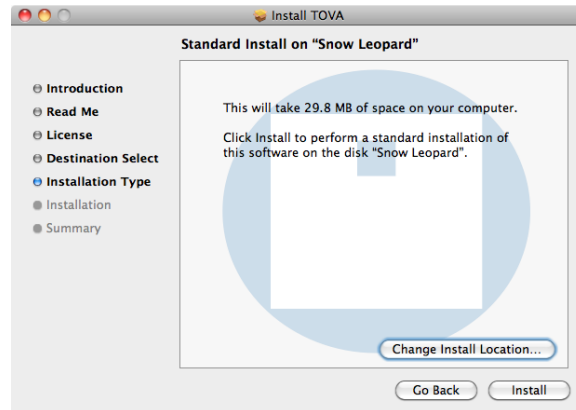
Figure 6: The T.O.V.A. 8.3 installer Install Type page

The install location is the `/TOVA` folder in the Applications directory of your main volume. Documentation is placed in the Docs folder therein. Do not change the install location or else automatic web updating will not work correctly. Click **Install** to begin installation.

6. Finally, you will be asked for your password in order to briefly grant the administrator privileges required to complete installation. Enter your password and click **OK**.

7. Installation should complete in a few seconds. After you click **Close**, your next step is to configure the T.O.V.A. 8.3 for this system. Proceed to section 11 on page 15.

11   Configuring the T.O.V.A.

The T.O.V.A. Configuration wizard will walk you through the most important settings your Administrator should review:
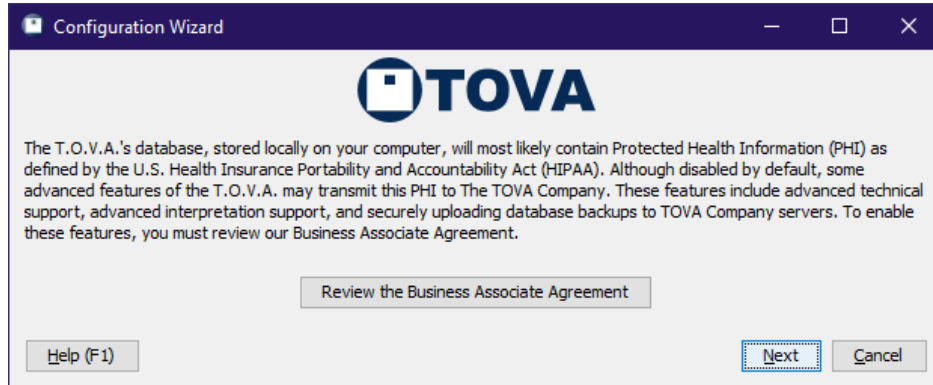
Figure 7: Configuration wizard

Business Associate Agreement - The T.O.V.A. provides a Business Associate Agreement to help us protect subjects' health information. You must review the agreement before proceeding. **Note:** Without a Business Associate Agreement in place, some features of the T.O.V.A. will be disabled (see section 23.1 on page 60). Click **Next**.

Back up to The TOVA Company server - The T.O.V.A. can securely back up your test sessions to The TOVA Company's server, assuming your T.O.V.A. computer is reliably connected to the internet. If your system or organization does not have its own backup process, we recommend you opt in. **Note:** You must accept a Business Associate Agreement to use this feature. Click **Next**.

Send information - This information will be sent in the background after you finish setting up the T.O.V.A. software. It's the same information that helps us when you request support, so if you want to know the nitty gritty details, see section 26.3 on page 79. Click **Next**.

Hardware setup type - Do you think you'll be running mostly PTE or EAV test sessions? The tester can always decide before launching each session, but here the Administrator can select the default. Hover your mouse over each option to view a detailed diagram of the hardware setup (which also appears in your Installation Guide). For more information, see section 29 on page 101. Click **Next**.

More settings - You can simply click **Finish** on the last page of the wizard, but there are a few other settings you may want to alter as an Administrator. Click **More settings** to review all of the T.O.V.A. preferences, such as:

- **Automatic backup** - Configure other automatic backup options, such as the frequency and backup path.
- **Database** - Use a separate T.O.V.A. database for each user or a different database path than the default. For more information, see **Database**, section 24.4 on page 64. Click **Next**.
- **Password** - Set a password to block the T.O.V.A. from unauthorized users.
- **Protected Health Information** - Hide personal subject information from view.
- **Session launch** - Set other session defaults here, such as using a boot CD.
- **Updates** - The T.O.V.A. 8.3 can be easily updated when features are improved or bugs are fixed. Depending on your environment, you may or may not want updates downloaded automatically.
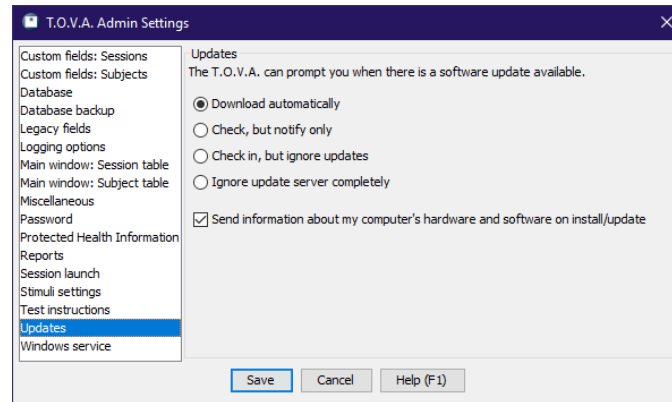
Figure 8: More settings

You can always go back and change these options later, but changing Admin preferences may require running **T.O.V.A. Admin Settings** (see section 24.1 on page 62). See section 24 on page 62 for more information on T.O.V.A. **Preferences**.

Once you have saved your configuration selections, you should install the T.O.V.A. 8.3 hardware. Proceed to section 12 on page 17.

12   Installing the T.O.V.A. Hardware

The T.O.V.A. is software *and* hardware. The hardware includes:

T.O.V.A. USB device: The main T.O.V.A. box includes jacks for your VGA monitor (necessary for External A/V testing), speakers, the T.O.V.A. microswitch, and, of course, your computer. For more information, see section 28.1 on page 85.

T.O.V.A. microswitch: The T.O.V.A. microswitch is the input device to the T.O.V.A. test. For more information about the **T.O.V.A. microswitch**, see section 28.2 on page 88.

Cables: These are USB, video, and audio cables for hooking the T.O.V.A. hardware up to your computer. (No AC adapter is included as no additional AC power should be necessary.)

Figure 9: The T.O.V.A. Hardware

12.1   Basic (PTE) hardware setup
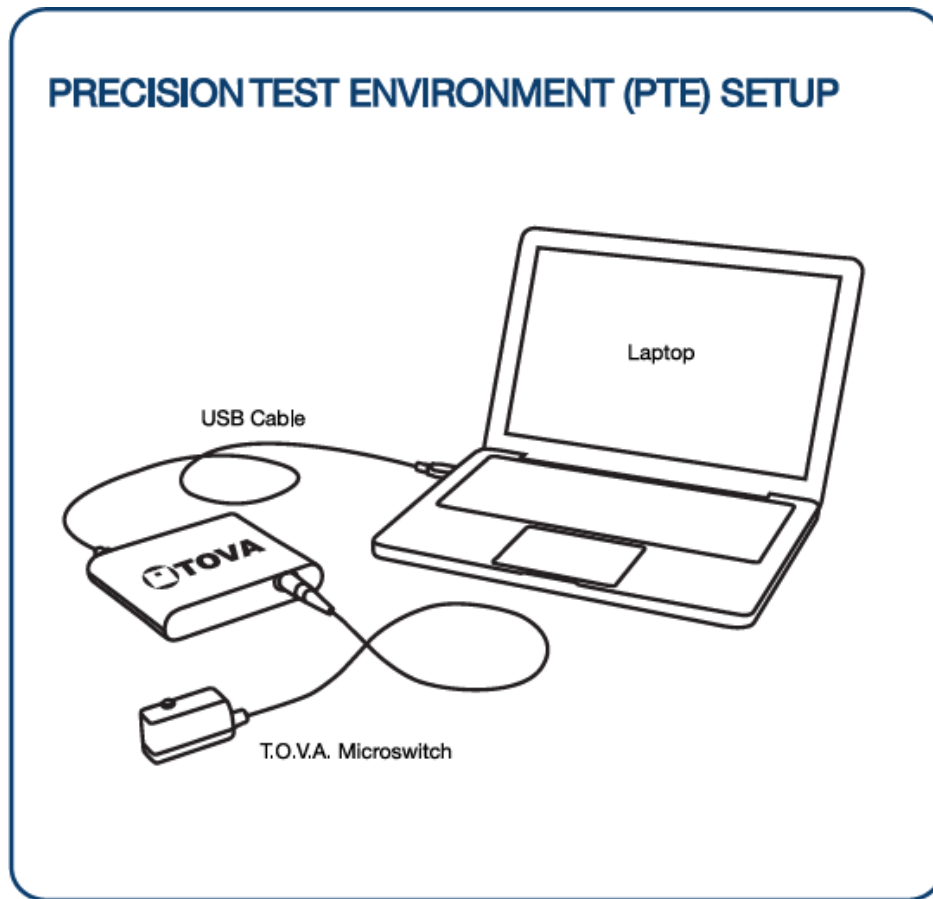
Figure 10: The PTE hardware setup

No qualification is necessary to install the T.O.V.A. software and hardware. T.O.V.A. hardware components are not user-serviceable and instead should be returned to The TOVA Company for repair. Technical Support is available if you have questions (section 26 on page 78).

1. Unpack all of the T.O.V.A. hardware from the T.O.V.A. kit.

2. Plug the T.O.V.A. microswitch into the T.O.V.A. USB device where it's labeled **T.O.V.A. microswitch**. Line up the arrows on the top of the connector with the top of the T.O.V.A. device and push it gently into the port. You do not need to twist or turn or squeeze in any way. See http://videos.tovatest.com for a demonstration.

3. Find a USB port on your computer. If your computer is less than ten years old, you should have many on the front, back, or even sides of your computer. They are labeled with this symbol:

Figure 11: USB

4. Plug the flat end of the USB cable into the computer's USB port.

> **Note:** Do not plug the USB cable into a USB hub. USB hubs will cause intermittent communication problems between the T.O.V.A. software and the T.O.V.A. USB device. **USB hubs are not supported.**

5. Plug the squarish end of the same USB cable into the T.O.V.A. USB device where it's labeled **usb**.

6. See the section below for additional hardware setup.

12.2   External Audio/Video (EAV) setup

The External A/V (EAV) hardware setup is the most convenient to use and works with nearly any modern computer. Because it requires an external VGA monitor and some additional connections, it works best for desktop computers, but it's compatible with any modern Windows or Mac computer.

12.2.1   Standard EAV desktop setup
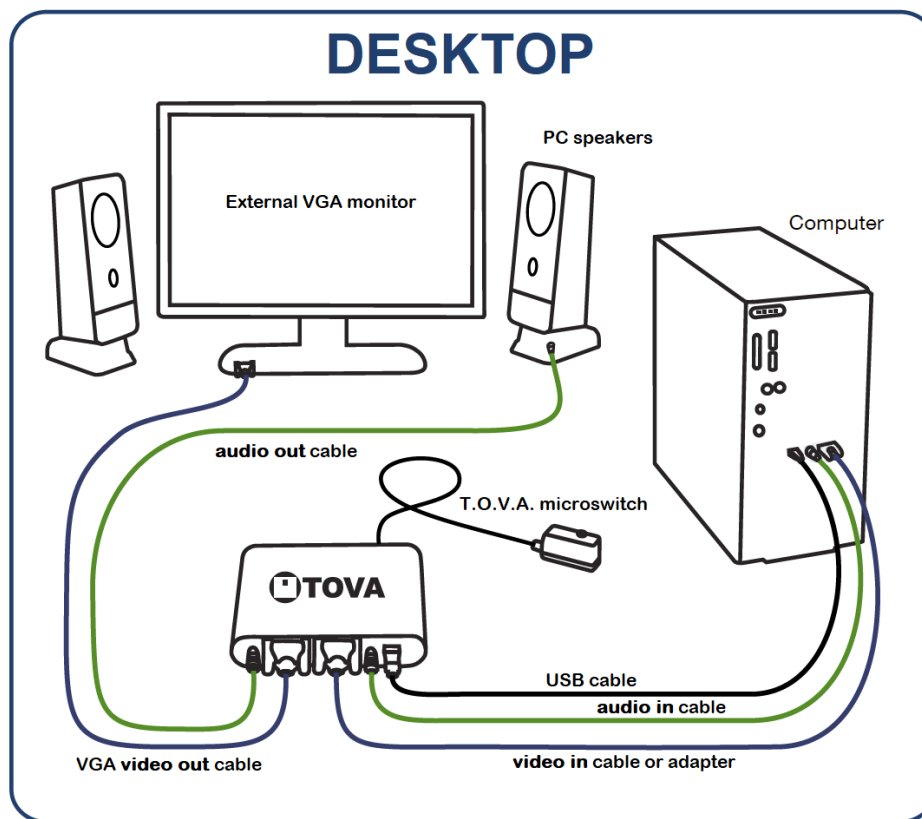
Figure 12: The EAV desktop setup

After you've connected the T.O.V.A. USB device to the computer as suggested above (section 12.1 on page 18), add the following connections:

1. Unplug your monitor's video cable from your computer's VGA port and replace it with the included T.O.V.A. video cable.

2. Plug your monitor's video cable into the T.O.V.A. USB device where it's labeled **video out**.

3. Plug the included video cable into your T.O.V.A. USB device where it's labeled **video in**.

4. Unplug your speakers' audio cord from the audio jack on your computer and replace it with the included T.O.V.A. audio cord.

5. Plug your speakers' audio cord into the T.O.V.A. USB device where it's labeled **audio out**.

6. Plug the included audio cable into your T.O.V.A. USB device where it's labeled **audio in**.

audio cable   VGA (video) cable
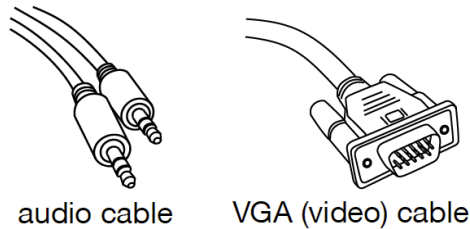
Figure 13: Audio and video cables

Now you should be set up to administer EAV sessions.

12.2.2   Alternative EAV hardware setups

The above instructions detail the full External Audio/Video (EAV) hardware setup, but there are a few alternatives to consider:

- If your computer does not have a VGA port, it probably has a video output of a different type, such as HDMI or DVI. Instead of the standard VGA cable, as included in the T.O.V.A. kit, you can purchase a VGA adapter cable from a computer or electronics store, and the EAV hardware setup should work just fine.

  Note: You **CANNOT** use an adapter cable to connect your T.O.V.A. USB device to your external monitor. The EAV hardware setup requires a **VGA connection** to a **VGA monitor** that natively supports a 1024x768 resolution.

- Instead of using an adapter cable, you can leave out the video connection between your computer and the T.O.V.A. USB device. This setup won't work on a regular desktop computer (since it doesn't have a built-in screen), but it will with a **laptop** or **all-in-one computer** (Figure 14). With this configuration, the T.O.V.A. test instructions will appear on your laptop or all-in-one screen, but the T.O.V.A. test itself will appear on the external VGA display.

- Some T.O.V.A. users do not make use of the T.O.V.A. auditory test, using the visual test only. If you don't intend to administer the auditory test, you can leave out the audio connections. The visual test and instructions will function fine without them.
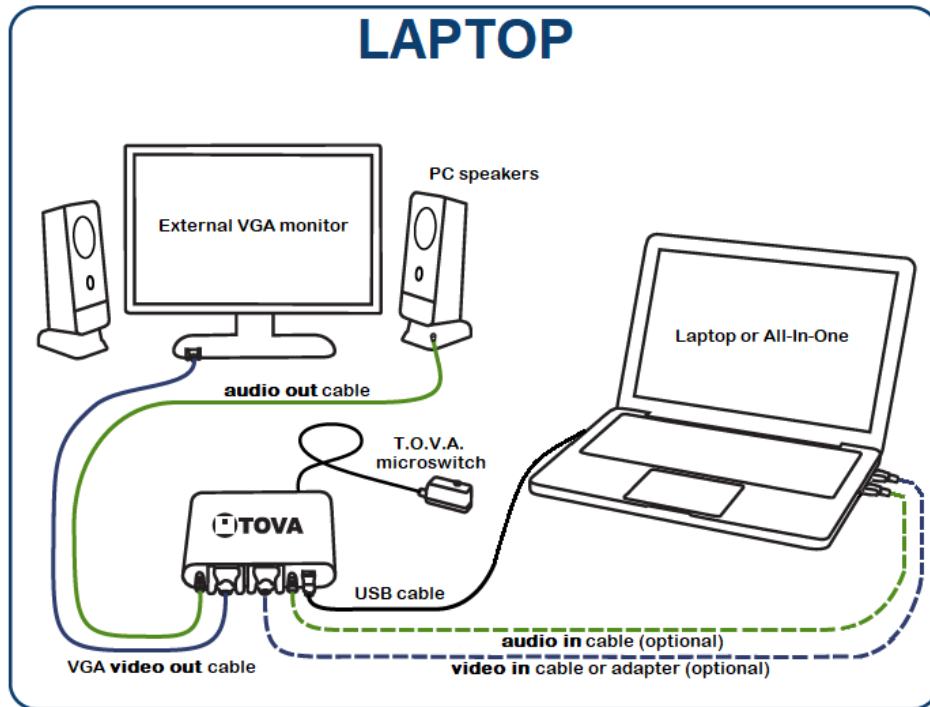
Figure 14: The EAV setup on a laptop

12.3 Other setup notes

- If you have any problems, you can find instructional videos at `http://videos.tovatest.com`.

- If you are using two displays—either an external monitor plugged into a laptop or simply two different external displays—make sure that the subject cannot see the non-testing display during testing, as it could be distracting.

- The visual T.O.V.A. was normed using stimuli under the following conditions:

  - A 12-inch screen (measured diagonally)
  - An eye-to-monitor distance of roughly 36 inches
  - Stimuli appear as 3-inch squares (measured diagonally)
  - Stimuli presented near the subject's eye level

  For more information, consult the T.O.V.A. Professional manual.

  Note: You can adjust the stimuli size in the T.O.V.A. Preferences (section 24.14 on page 71).

12.4 You're done installing the T.O.V.A. hardware! Now what?

If you're installing the T.O.V.A. for the first time, you should see the first page of the T.O.V.A. Hardware Setup wizard that immediately follows the Configuration wizard. We recommend that you complete the Hardware Setup wizard to confirm that you've attached your hardware correctly. Please continue on to the section 13 on page 22.

13   Testing Your Hardware Setup

The Hardware Setup wizard starts automatically after you finish the Configuration wizard (section 11 on page 15), and it helps you to test your T.O.V.A. hardware connections to make sure you're set up correctly. The T.O.V.A. hardware must pass each test to go on to the next page. If you haven't set up your hardware yet, please see section 12 on page 17 first.

Note: Which pages you see will depend on which hardware setup you selected in the Configuration wizard.

13.1   Introduction page

When you see the first page of the Hardware Setup, it's time to attach your T.O.V.A. hardware. Follow the **"Installation Guide"** included with your T.O.V.A. 8.3 kit. When you have finished installing your hardware, click **Next** to begin testing your hardware and connections. If you have questions about installing your hardware, see section 12 on page 17.

13.2   Checking for your T.O.V.A. USB device
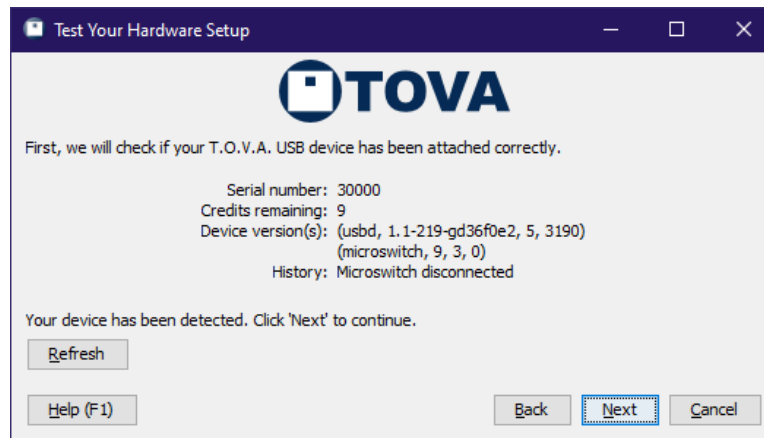
Figure 15: Your T.O.V.A. USB device is correctly attached

The first test of the Hardware setup wizard tries to detect your T.O.V.A. USB device. If it reports "No T.O.V.A. devices found", you may not have attached the device correctly. See section 28.1.2 on page 86 to help you troubleshoot this problem, and click **Refresh** to try detecting the device again.

When your T.O.V.A. USB device has been detected, click **Next** to continue.

13.3   Testing your microswitch

Once your device has been detected, we next ask you to test that your microswitch is correctly attached and working. Choose **Check microswitch** and press the microswitch button ten times. Be sure to press the button *exactly* ten times: If the microswitch test persistently reports more or fewer presses than you give it, you should contact The TOVA Company to replace your microswitch **immediately**.

When your microswitch test passes, click **Next** to continue.

13.4   Trying out the PTE

Note: If you chose the EAV hardware setup, you should skip to the next section (section 13.5 on page 23).

This is the last step of the PTE Hardware Setup wizard. By now you have your T.O.V.A. USB device and microswitch attached correctly. Next, you should try out the PTE, where you will be administering tests to your subjects.

1. Click **Try out the PTE**.

2. Click **OK** to reboot your computer.

3. **Mac users**:

   (a) Hold the **Option** key while restarting until a menu of boot devices appears.

   (b) Choose **T.O.V.A. PTE** or **Windows**.

4. After some black screens with scrolling techno-babble, the Precision Test Environment (PTE) should appear.

   - For what to test in the PTE, see section 31.1.4 on page 105.
   - If your computer boots back to Windows or macOS, contact T.O.V.A. tech support (section 26 on page 78).
   - If you encounter other problems, see section 31.2.3 on page 109.

Once you've tried out the PTE, you have finished verifying your PTE Hardware Setup. Congratulations! You've finished installing the T.O.V.A.! We *strongly* recommend that you go ahead and read through 'Using the T.O.V.A.' (section 16 on page 29).

13.5   Testing your video connections

Note: If you chose the PTE Hardware setup, you will not see this page of the wizard nor those following.

There are a few more attachments to verify for the EAV Hardware setup. Click **Check EAV Video** and—if your video attachments to your computer, T.O.V.A. USB device, and monitor are correct—the device will send a T.O.V.A. image to your screen for a few seconds.

If you do not see the images (the T.O.V.A. logo, visual test stimuli), make sure that 'video out' is connected to your display and 'video in' is connected to your computer's VGA port: It's easy to reverse them.

When your video test passes, click **Next** to continue.

13.6   Testing your audio connections
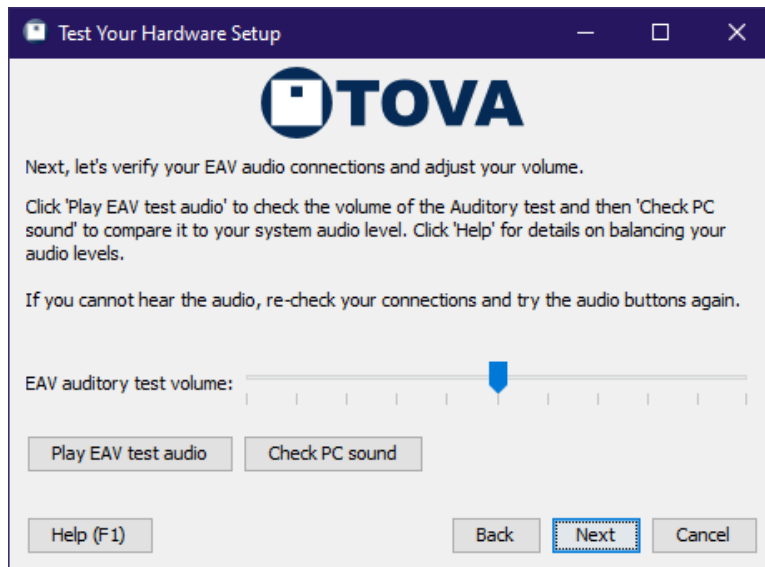
Figure 16: Separate instruction and test audio volumes

Next, we want to verify that your audio cables are attached correctly to your computer, your T.O.V.A. USB device, and your speakers, and that the volume is appropriate to your system.

Choose **Play EAV test audio** to play a series of sounds to verify the connection between your T.O.V.A. USB device and speakers. Choose **Check PC sound** to test your system volume and the entire audio connection. For more information on adjusting and troubleshooting audio problems, see section 28.8 on page 98.

When you have verified that your audio is working and the volume is properly adjusted, click **Next** to continue.

13.7   Your EAV Hardware Setup is complete!
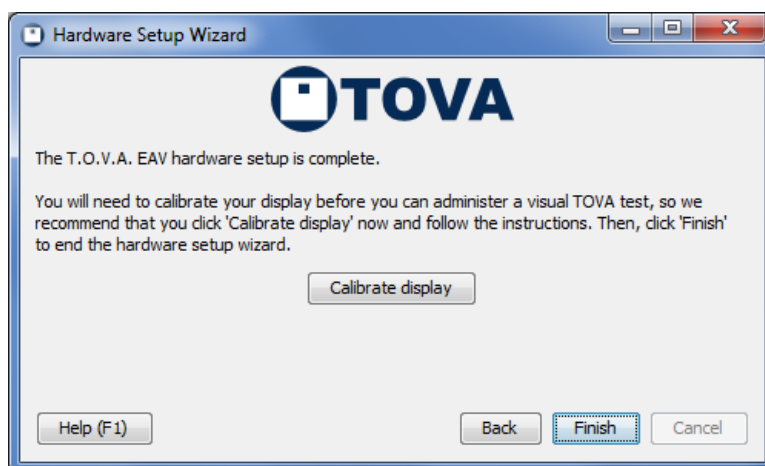
Figure 17: After confirming your hardware setup, calibrate your display.

Once you've reached this page, you have verified that your hardware is installed correctly for EAV testing. Before you finish, though, click 'Calibrate display'. Successful display calibration is required before you can administer a Visual T.O.V.A. test. See section 17.5.1 on page 36 for more information.

Congratulations! You've finished installing the T.O.V.A.! We *strongly* recommend that you go ahead and read the quick and helpful 'Using the T.O.V.A.' guide, section 16 on page 29.

14   Uninstalling the T.O.V.A. 8.3 in Windows

There may be times when you'll want to uninstall the T.O.V.A. 8.3. We've done our best to make that process simple and straight-forward.

WARNING! We always recommend that you back up your database before installing or uninstalling the T.O.V.A. You can never be too careful!

1. Go to your Control Panel and choose **Add/Remove Programs**, **Programs and Features**, or **Uninstall a Program** (It depends on your version of Windows.) You will see a list of your installed programs, including **T.O.V.A. 8.3** .

2. Highlight **T.O.V.A. 8.3** and click on **Uninstall** or **Remove**.
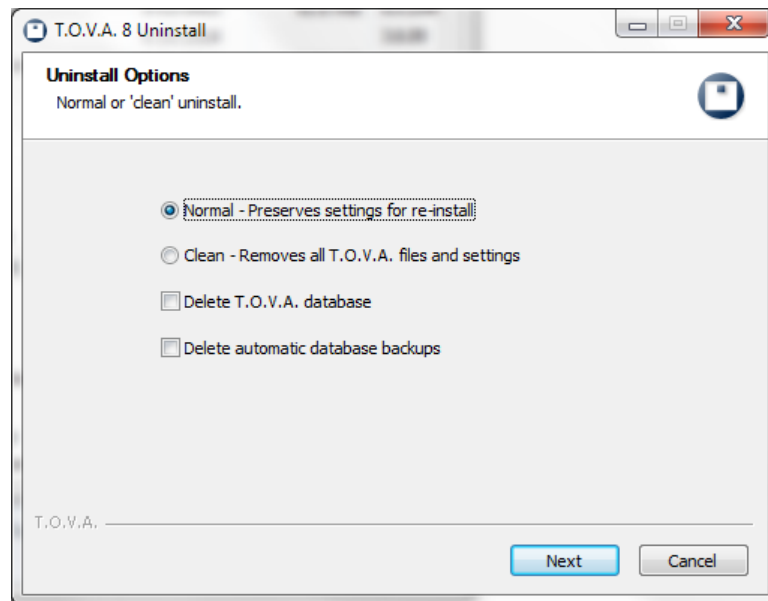
Figure 18: Choose your uninstall options

3. There are a few uninstall options:

   - **Normal uninstall** - Most of the time, you will want a **Normal** uninstall. This will leave some things behind:
     - Your T.O.V.A. 8.3 database (section 24.4 on page 64 for location).
     - Any automatic database backups (section 24.5 on page 65 for location).
     - Some settings at the install folder, usually `C:\Program Files (x86)\tova_8`
     - A few registry entries in `HKEY_LOCAL_MACHINE\SOFTWARE\The TOVA Company\T.O.V.A. 8`.
     - A few other logs, settings, and temporary files that might have useful information for support.
   - **Clean uninstall** - If you choose **Clean**, the uninstaller will do its best to remove all files and registry settings, except for your actual T.O.V.A. data. Choose this if directed by T.O.V.A. technical support, if there is concern that your current settings could be causing a problem.
   - **Delete T.O.V.A. database** - This will remove your T.O.V.A. database, with all of your subject and session information and test data. ***Please only choose this option if you are confident you've already securely and reliably backed up this data***, such as when you are clearing space on an old computer. If you are worried about destroying personal and private health information, please take steps to securely wipe or destroy the hard drive.

- **Delete automatic database backups** - This should remove any partial or complete T.O.V.A. automatic database backups. Again, *only choose this option if you are confident you've already securely and reliably backed up this data elsewhere*. This may not remove any manual backups you've saved to a different name or folder. If you are worried about destroying personal and private health information, please take steps to securely wipe or destroy the hard drive.

   Click **Next** when you have selected your options.

4. Uninstall details - The next page shows the progress of the uninstall. When the uninstall is complete, click **Close** to exit the uninstaller.

15   Uninstalling the T.O.V.A. 8.3 on a Mac

There may be times when you'll want to uninstall the T.O.V.A. 8.3. We've done our best to make that process simple and straight-forward.

WARNING! We always recommend that you backup your database before installing or uninstalling the T.O.V.A. You can never be too careful!

You can remove the T.O.V.A. application and manuals by dragging the folder `/Applications/TOVA` to the Trash. You may need to type your password or administrator password to delete this folder. This will leave behind:

- Your T.O.V.A. 8.3 database, in either `/Users/Shared/TOVA` for the shared location, or `Library/Application Support/TOVA` in your home folder for the separate location.

- The T.O.V.A. application log at `/Users/Shared/TOVA/system_jui.log`.

- The T.O.V.A. user preferences in your home folder's `Library/Preferences/com.tovatest.data.plist`.

- The T.O.V.A. system preferences at `/Users/Shared/TOVA/system.properties`.

- The T.O.V.A. admin preferences in `/Library/Preferences/com.tovatest.data.plist`.

We have also included a command script on the T.O.V.A. flash drive to remove all traces of the T.O.V.A. from your system. You will find it in `TOVATEST/utilities/mac_uninstall.command`. Double-click on this script in the Finder to run it. Type "uninstall" to confirm, and your password to authenticate when indicated. If you want even the T.O.V.A. database removed, type "delete" when asked, but **please note that this will remove all your T.O.V.A. test data**.

16   Uninstalling the T.O.V.A. Hardware

To uninstall the T.O.V.A. hardware, simply do the opposite of the instructions above in **Installing the T.O.V.A. Hardware** (section 12 on page 17).

If you have the EAV (External A/V) hardware setup, you may disconnect those connections first:

1. Unplug the T.O.V.A. video cable from your computer's VGA port.

2. Unplug your monitor's video cable from the T.O.V.A. USB device and plug it into your computer's VGA port.

3. Unplug the T.O.V.A. audio cable from the audio jack on your computer.

4. Unplug your speakers' audio cord from the T.O.V.A. USB device and plug it into the audio jack on your computer.

Once any EAV connections are removed, disconnect the rest of the hardware:

1. Unplug the T.O.V.A. USB cable from your computer's USB port.

2. Place your fingers on the dimpled sides of the T.O.V.A. microswitch connector and gently pull it apart from the T.O.V.A. USB device.

This will terminate operation of the T.O.V.A. USB device.

Using the T.O.V.A. 8.3

In this part of this manual, we'll show you the parts of the T.O.V.A. you'll use on a regular basis.

- **Administering the T.O.V.A. Test**, see section 17 on page 30
- **The T.O.V.A. Report**, see section 18 on page 41
- **Backing up the T.O.V.A. Database**, see section 20 on page 51
- **Ordering Test Credits**, see section 19.1 on page 48
- **Importing T.O.V.A. files**, see section 21 on page 53
- **Exporting**, see section 22 on page 57
- **Protecting Personal Health Information**, see section 23 on page 60
- **Settings and Preferences**, see section 24 on page 62
- **How Do I Ask a Question?**, see section 26 on page 78

17 Administering the T.O.V.A. Test

In this section of the manual, we'll give you practical, basic instruction in how to administer the T.O.V.A. test using the T.O.V.A. 8.3.

17.1 Overview

There's a simple series of steps you'll need to do in order to administer the T.O.V.A. test:

1. Make sure the subject is prepared for testing.

2. Create a new session for an existing subject or a new subject and session.

3. Launch a T.O.V.A. session. You can either:

    - Launch an External A/V session
    - Launch a PTE session and reboot your system to the Precision Test Environment.

4. Run the multimedia test instructions

5. Administer a practice test

6. Administer the T.O.V.A. test

    - If this is a PTE session, exit the PTE after the T.O.V.A. test to return to your OS.

7. Use a credit to save the session into the T.O.V.A. database.

8. View/print/export the T.O.V.A. report

17.2 Pre-test Preparation

Preparing the subject is *crucial*, because it assures that the test is administered properly and replicates the same conditions as the T.O.V.A. norms. This includes when, where, and how the test should be administered.

You may also want to enter the subject and session information before the subject arrives. Next, we'll tell you how to do that.

17.3 Selecting a subject

Administering a T.O.V.A. test starts at the main window. Here you may select a subject or create a new subject.
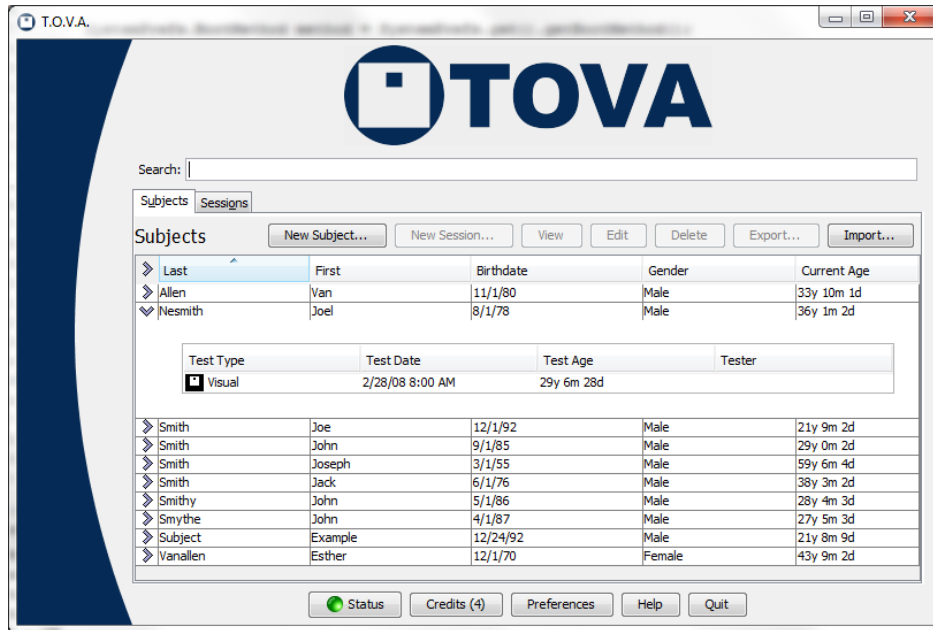
Figure 19: Main T.O.V.A. window

17.3.1   Creating a new subject

Creating a new subject is easy.

Notice first the red labels on **Birthdate** and **Gender** (Figure 20). These are the only required fields for creating a new subject. While entering a subject name is usually helpful, some users may prefer to leave out the subjects' names altogether to better protect personal health information.
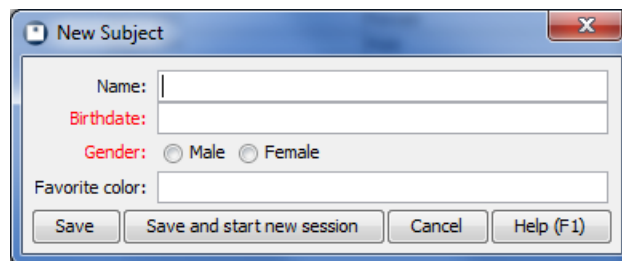
Figure 20: New Subject window

1. Click on the Subjects tab.

2. Click on the **New Subject** button.

3. Enter the subject information.

   Note: Entering dates in the T.O.V.A. is easy, but the format depends on the preferences that are set in your operating system (e.g., Windows). For instance, if you're in the United States, dates are most likely in the format **mm/dd/yyyy**, but in Europe they're probably **dd/mm/yyyy**. When entering the birth date, **please check the age** to make sure you've entered it right. A shorter 10.8-minute test is administered to subjects ages 4 to 5.5, so an incorrect date of birth can result in the wrong test format.

Notice also our custom field, **Favorite color**. You will not see this field, of course, but you may see other custom fields that your organization has created. For more information on Custom Subject and Session fields, see section 24.3 on page 63.

4. Click **Save** to save the new subject, or, if you're ready to test now, click **Save and start new session** and proceed to section 17.4 on page 33.

That's it! You've created a new subject in the T.O.V.A.

17.3.2   Selecting an existing subject

If you've already created the subject, the next step is to find and select the subject you want to test. Near the top of the main window (Figure 19) is a search bar. Here you can search for the subject you want to test by name, subject number, birthdate, test date, or any custom fields you've created. This will be an important tool once you've administered a few dozen tests.

1. Click on the **Subjects** tab.

2. Type in the search criteria and press **Enter**.

3. Now you see only the subjects that match that criteria.

4. **Note:** If you click the **Sessions** tab now, you'll see only the sessions that match the same criteria.

For more search techniques, see section 35.2 on page 126. Another way to find your subject quickly is by clicking on the column headers. Click once to sort the table on that field and again to reverse the sort order.

Once you've found the subject you want to test, highlight the subject and click **New Session**.

17.4   Entering test session information

Figure 21: Choose session options

Now that we've selected a subject and started a new session, we can enter a little information about this test session and launch the session. You should choose now between administering a visual or auditory test and make sure that the age and test date is correct.

Note: It is critical that the subject's gender and age is correct. Any mistake here will invalidate the accuracy of the T.O.V.A. report, since comparison to the T.O.V.A. norming study must be done for the proper gender and age group.

Click **Instructions language** to change the test instruction language for the session you're about to give then click **Close**, or choose **Save as default** to make that language the new default. See section 33 on page 113 for more information on the T.O.V.A. test instructions.

Adding treatments, including medications and dosages, will aid in interpreting the test. In addition, you can enter the name of the tester, fill in any custom fields, or add comments, but none of these are required before administering a T.O.V.A. test session. And you can always add or modify session information after the session has been administered.

At the bottom of this window, under **Session Launch**, you will see a brief description of how the session will be launched. The settings here will always default to what the administrator has specified in the Preferences

(section 24.13 on page 69), but if you want to change these settings for this session, click on the **Options** button.

17.4.1   Advanced test formats
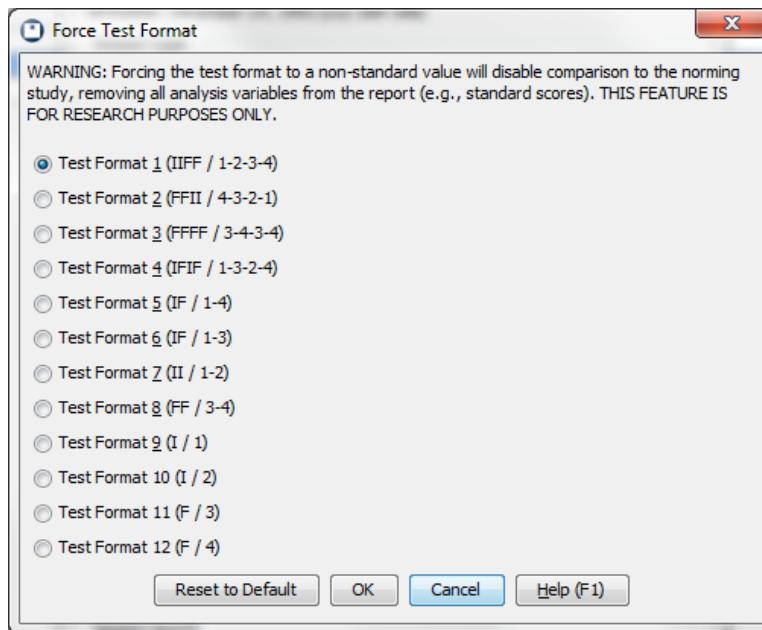
Figure 22: Alternative test formats are available for researchers

The T.O.V.A. 8.1 added alternative Test Formats. From the New Test Session window, choose **Advanced** to select a different test format.

Note: These should only be used by researchers, as alternative test formats are not normed.

17.4.2   Launch options

Let's say you decide you want to prepare your system to launch the PTE session, but you want to reboot **later** after you finish writing an email. Any change you want to make from the way the T.O.V.A. usually launches a session, you can make here.

Once you've configured the session launch options how you want them for this session, click **Close**. If you'd like to save these as your new default launch options, choose **Save as defaults** instead. For more information on your launch options, see section 24.13 on page 69

Let's look briefly at the two testing environments.

17.4.3   External Audio/Video (EAV) session

The T.O.V.A. EAV session does **NOT** require rebooting your system. Instead of relying on your system's clock, video, etc., the T.O.V.A. hardware functions as a separate computer with its own timing.
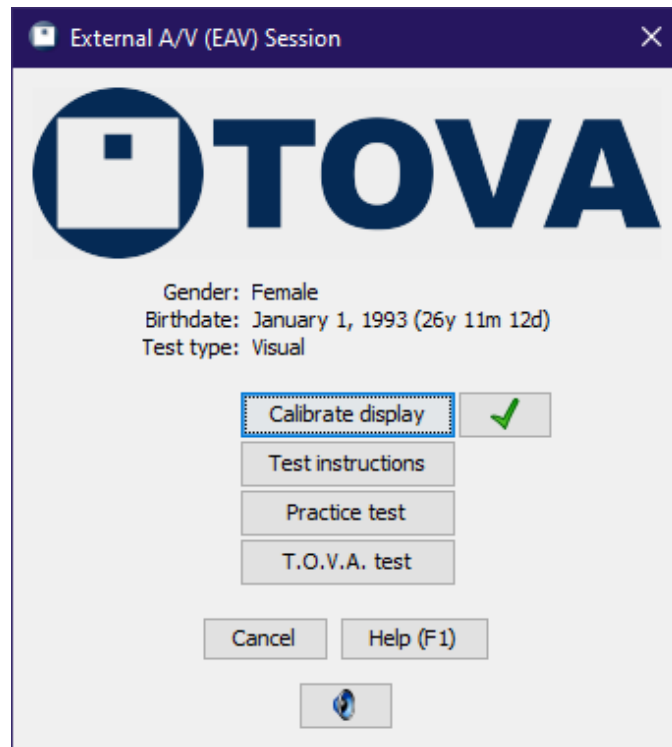
Figure 23: External A/V session

Because of this, an EAV session **DOES** requires an external VGA monitor (and speakers, for the auditory test) plugged into the T.O.V.A. USB device. See section 30 on page 102 for more information.

Note: Please make sure to disable, at least temporarily, any Sleep/Standby/Hibernate power settings for your system. Because External A/V testing does not use the keyboard or mouse, some computers will shut down due to inactivity. See section 34.1 on page 119 for more information.

17.4.4   Precision Test Environment (PTE) session

The T.O.V.A. PTE is a real-time operating system designed exclusively to administer the T.O.V.A. test. There are many options available for launching the PTE; those available will vary based on your computer and its configuration. Using the PTE requires rebooting your system, so be sure to save your work in other applications before launching the PTE.
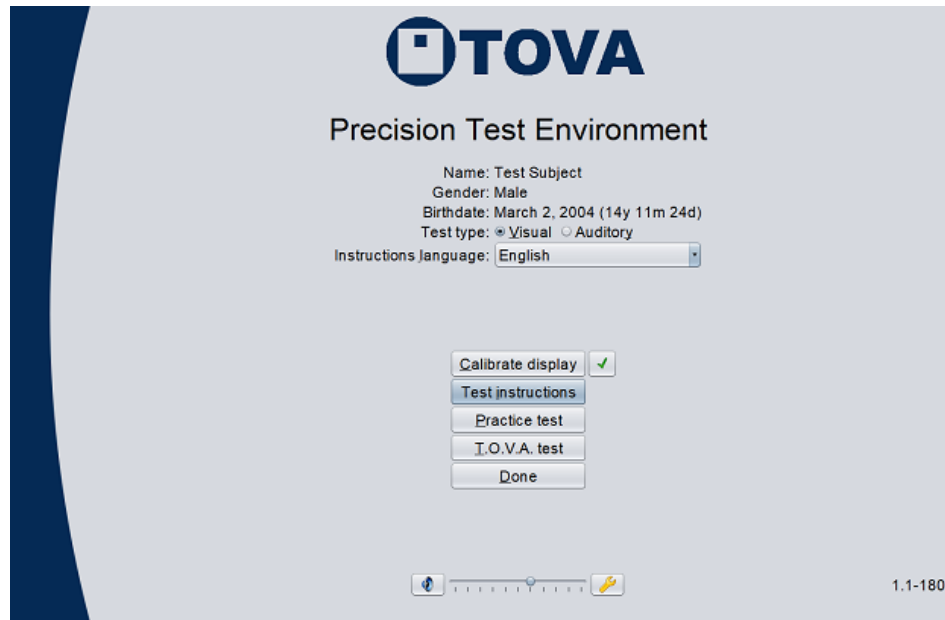
Figure 24: The Precision Test Environment

For more information on the Precision Test Environment, see section 31 on page 103. For information on PTE launch options, see section 24.13 on page 69.

17.5   The T.O.V.A. test session

Once you've entered all the test session information and set up the launch as you want it, click **Launch** to start the T.O.V.A. test session. As you can see from the screenshots above, both testing environments have the same basic steps to administer a T.O.V.A. test.

Note: *Always* make sure that your computer is plugged into a power outlet during Session mode. A low battery during a test session may cause the test data to be lost.

17.5.1   Calibration

Note: If you're administering an auditory test, you will skip this step and go right to test instructions, section 33 on page 113.

Accurate, precise timing is critical to testing, and there are more different kinds of monitors than ever, so our T.O.V.A. microswitch has a screen calibration sensor.

Figure 25: Microswitch light sensor

With this sensor and a brief 10-to-30-second calibration, we can conform the timing of the T.O.V.A. test to your display. There will be some monitors that are too unpredictable for the T.O.V.A. to work with. By performing this calibration step, we can recognize and alert you if your monitor's timing will be out of range.

Figure 26: Calibrating the T.O.V.A. to your display.

1. Click **Calibrate Display**.

2. Hold the microswitch to the screen, lined up with the image, with the button facing away from the screen.

3. Click the microswitch button.

4. Try to hold the microswitch still until the calibration completes.

Calibration will take 10-30 seconds. Once we've calibrated the T.O.V.A. to your monitor, the T.O.V.A. will store that data, so you only have to calibrate once for EAV testing and once for PTE testing (See section 30 on page 102 for more on the differences). **Note:** If you install a new monitor or video card, it's important that you recalibrate the T.O.V.A. to that new hardware.

Note: See section 28.5 on page 94 for more information if you encounter problems during calibration.

17.5.2   The test instructions

The next step is giving the subject instructions on how to take the T.O.V.A. test. Click the **Test Instructions** button to start the multimedia test instructions. See section 33 on page 113 for more information on test instruction languages, controls, and options.

17.5.3   The practice test

After receiving the test instructions, the subject should take a two-minute practice test. When you click **Practice Test**, the subject will receive a few final instructions; then the subject will be prompted to click the microswitch to begin the practice test.

When the practice test is complete, the T.O.V.A. automatically displays the results. If there were a lot of Omissions or Commissions (Figure 27), perhaps the subject needs further explanation. The subject can re-take the practice test if necessary.
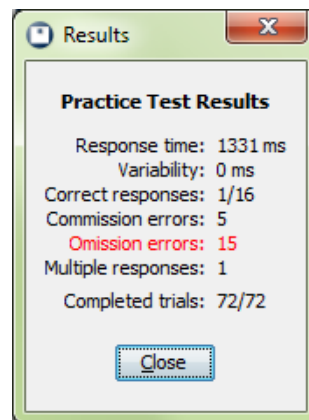
Figure 27: Results of a misunderstood practice test

17.5.4   The T.O.V.A. test

When you click **T.O.V.A. Test**, the final instructions before the T.O.V.A. test will be given, and the subject will be prompted to click the microswitch to begin the T.O.V.A. test.

For more information on the boring details of the T.O.V.A. test itself, see the Professional Manual (Available from the Help window, section 35.5 on page 130).

If the T.O.V.A. test is interrupted (by pressing **Esc** or if there is a hardware failure), a message will appear asking the user to **Continue**, **Start over**, or **Abort** the T.O.V.A. test. For the best results, we recommend that you **Start over** on any interrupted test. Click **Abort** to stop the test before it is finished—you will be prompted to either save the unfinished test's data or erase it. Click **Continue** to resume the test where the subject left off. Any interruptions will be noted in the test data and on the report.

17.5.5 Test results

Once the T.O.V.A. test is completed, a summary of the finished test will appear. If you are using the PTE, this will appear after you boot back to your OS. Make sure to examine the summary before saving the data. If there are very few button presses, perhaps the subject did not understand the test instructions. If not all the stimuli were shown, the test may have been aborted before it was complete. In either case, it may not be worth using a test credit to save the T.O.V.A. data, and you may choose to **Erase data**.
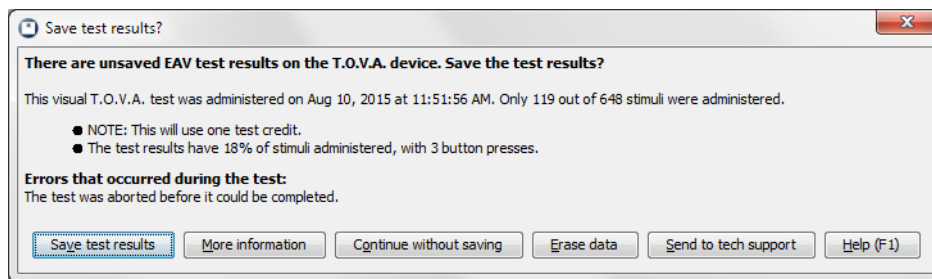
Figure 28: This test was completed with very few button presses.

If the summary information looks fine, choose **Save test results** to retrieve the T.O.V.A. test results and store them in the T.O.V.A. database. If you're not sure whose test this is, you can view the subject information by clicking **More information**.

Note: You must use a test credit to save the T.O.V.A. test data. If you **Continue without saving**, the T.O.V.A. test results will remain on the device, but they will be **lost** the next time a T.O.V.A. test is administered. For more information about test credits, see section 19 on page 48.
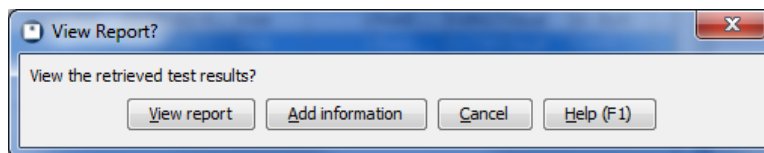
Figure 29: View the report on this T.O.V.A. data?

Next, you have option to view a report on the test data immediately. Choose **View report** to see a report now or **Cancel** if you'd prefer to see the report later. The report can be viewed afterward at any time. You can also choose **Add information** to add/edit session information before you view the report.

For more information on the T.O.V.A. report, see section 18 on page 41.

17.6   So now what?

Congratulations! You've just administered a T.O.V.A. test!

The T.O.V.A. test data is now stored in your database along with the subject information. So what do you do now?

- **Add further information or comments to the session or modify notes made earlier?** See section 35.3 on page 129.

- **View the report on this data?** See section 18 on page 41.

- **Start another session for this subject?** See section 17.3.2 on page 32.

- **Start a session for a new subject?** See section 17.3.1 on page 31.

- **Modify launch defaults for future sessions?** See section 24 on page 62.

- **Get interpretation support for this test session?** See section 26 on page 78.

- **Request additional test credits?** See section 19 on page 48.

- **Compare this test to other test data?** See section 18.3 on page 44

17.7   Finished with the T.O.V.A.

When you are finished using the T.O.V.A. for the day, please exit the T.O.V.A. application by clicking **Quit** in the main T.O.V.A. window. There is no operation to "power down" the T.O.V.A. USB device and no need to disconnect the T.O.V.A. hardware when not using it, so we recommend that you keep the T.O.V.A. USB device attached. If it's convenient, you may uninstall the T.O.V.A. hardware when you are not using the T.O.V.A. application (see section 16 on page 27), but we recommend that you save your test data first.

18   Reporting

Viewing a report is easy. In the main window, highlight the session you want to report on and choose **View**.

Note: If you want to view a comparison report, highlight more than one session using Shift-click or Ctrl-click. The **View** button becomes a **Compare** button, and when you choose it, you will see a graph comparing the highlighted sessions. For more information on the comparison report, see section .
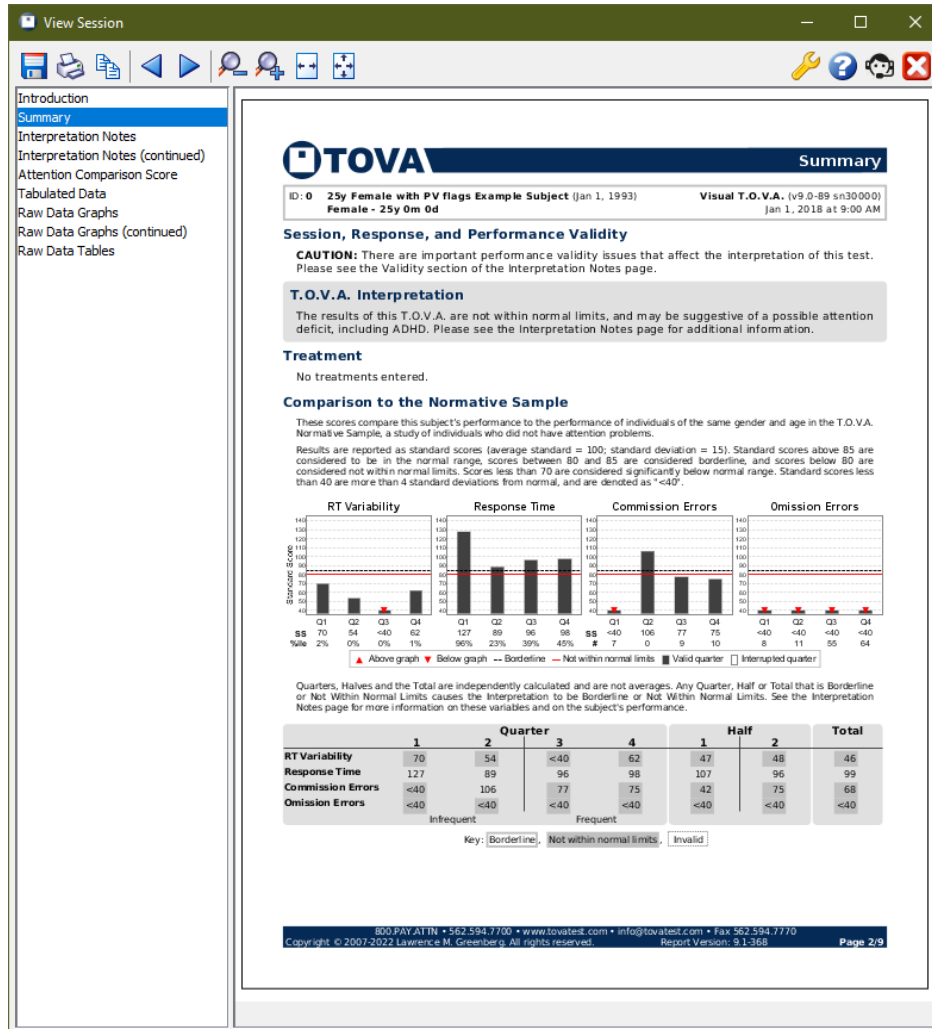
Figure 30: The T.O.V.A. Report

While you're viewing a report, you have other options:

Save - Exports a .pdf file of the report

Print - Send the report to your printer

Copy... - Copy the text of the current report page or the entire report to your clipboard

Back/Next - Proceed through the pages of the report

Smaller/Larger - Zoom out/in on the report pages

Fit to width - Zooms the report page to the width of the window

Fit page - Zooms to view the entire page of the report in the window without scrolling

Customize - Choose which pages of the report to display, among other customizations. See **Customizing the Report**, section 18.1 on page 42 below.

Help - Loads this Help section

Close report - Closes the report window.

On the left of the report window is a list of the pages of the report. Highlight a page to view it in the right pane.

18.1   Customizing the Report
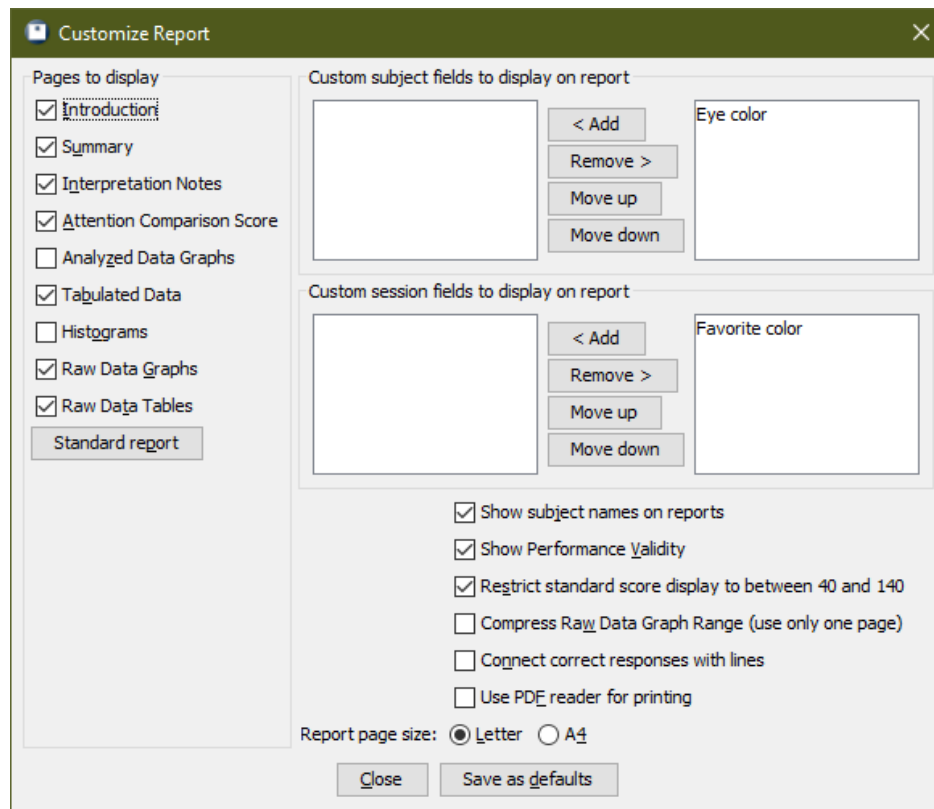
Figure 31: Select pages and fields to include

Choose **Customize** from the Report window, and you'll find several ways to customize the T.O.V.A. report:

- **Pages to display** - Select pages to include in your report. You can select pages individually, or you can choose a **Standard report**, which automatically selects the pages we expect most users will want to include (section 18.2 on page 44).

- **Custom fields** - Choose which custom subject and session fields should appear. When selected, custom fields will appear near the top on most pages of the report.

Note: By default, new custom fields do not appear in the T.O.V.A. report until they are selected, and even then, the field will only appear if it has a value. In other words, if you set no value for Sarah's hair length, that session's report will not display "Hair length: ", it will just not appear.

- **Show subject names on reports** - If unchecked, this simply causes the subject's name to not appear on the report when viewed, printed, or saved to a .pdf.

- **Show Performance Validity** - Uncheck this option to hide Performance Validity.

- **Restrict standard score display to between 40 and 140** - Uncheck to show raw values.

- **Compress Raw Data Graph Range** - Raw Data Graphs was expanded in T.O.V.A. 8.2 to two pages in order to show the full range. Select this option to compress the graphs to fit on a single page, as in previous T.O.V.A. versions.

- **Connect correct responses with lines** - This option draws lines from one correct response to the next on the Raw Data Graphs.

- **Use PDF reader for printing** - Some printers conflict with our default approach to printing the T.O.V.A. report, causing the report to print very slowly or incompletely. When selected, this works around the problem by exporting the T.O.V.A. report to a PDF and printing the report through your installed PDF viewer. You will need PDF reader software installed to use this feature, but most options will work.

- **Report page size** - Choose between **Letter** and **A4**.

Once you've made your changes, choose **Apply**, or choose **Set as default** to apply your changes to this and all future reports. Close the window to abandon your selections.

18.2   Report Pages

Here's a little about each page of the report, including which pages appear in the **Standard** report, as well as which pages are available for a Screening report:

Page Name	Standard	Screening	Description
Introduction	X	X	The report's cover page that briefly explains what the T.O.V.A. is.
Summary	X	X	The overall conclusions drawn from the test results in text and graphical form.
Interpretation Notes	X		Notes on the subject's performance.
Attention Comparison Score	X		Lists any treatments entered for the session, followed by a breakdown of the ACS.
Analyzed Data Graphs			Contains larger graphs of each of four variables as found on the Summary page.
Tabulated Data	X		Tabulated raw data for each quarter, half, and total, as well as session and test parameters.
Histograms			Intended for researchers and advanced T.O.V.A. users interested in response-time histograms.
Raw Data Graphs	X		Graphically displays the subject's trial-by-trial responses. Can be two pages or compressed to one page (section 23 on page 60).
Raw Data Tables	X		Table of the subject's trial-by-trial responses.

Table 1: Pages of the T.O.V.A. report

18.3   Comparison Graphs

When you select more than one session in the main window, the **View** button becomes a **Compare** button. Click it to bring up a report with graphs comparing statistics of the selected sessions.

You can highlight multiple sessions using **Ctrl**-click (Mac users, **Command**-click) to highlight each additional session, or **Shift**-click to highlight a range of sessions.
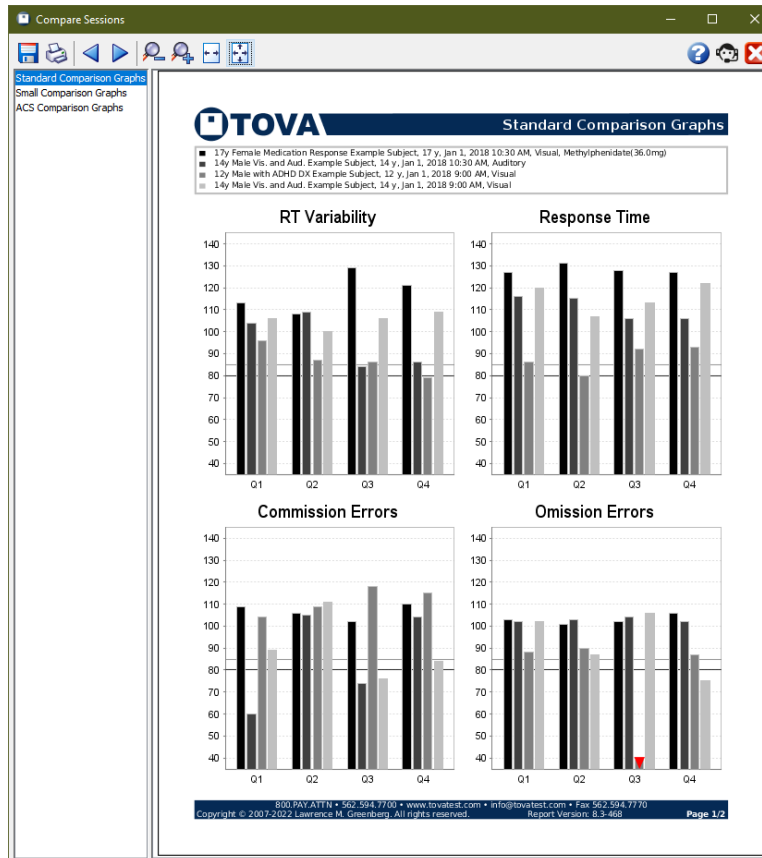
Figure 32: The Comparison Report

There are three pages:

Standard Comparison Graphs - Similar to those in the T.O.V.A. 7, this displays four graphs, each comparing the results for one statistic each session and quarter.

Small Comparison Graphs - This contains many smaller graphs, one for each session and statistic, so that you can compare graphs rather than values.

ACS Comparison Graphs - This page displays the ACS score bars of the selected sessions, so you can easily compare the scores.

18.4   Pasting content into Word

When you are viewing the T.O.V.A. report, you can click the **Copy...** button to copy the text of the current page or of the entire report to your OS's clipboard. You can also right-click on a specific table (such as the **Tabulated Data** table) in the report and choose **Copy table**. Once it's copied to your clipboard, switch to your word processor and paste it there.

Figure 33: Copy just the table

If you need help taking pasted report text and converting it to tables in Microsoft Word 2007, here's a tip:

1. Highlight the text you want to convert into a table.

2. Click on the **Insert** tab.

3. Click on **Table**.

4. Choose **Convert Text to Table**.

5. Click **OK**.

For earlier versions of Word, try this:

1. Highlight the text you want to convert into a table.

2. Click on the **Table** menu, choose **Convert**, and then **Text to Table**.

3. Click **OK**.

18.5   Printing problems

We try to support all printers, but if you encounter problems printing the T.O.V.A. report, there is a workaround:

18.5.1   Windows

1. In the Report window, click **Save** and save the .pdf file to a known location (such as your desktop).

2. Open that location and right-click the .pdf file.

3. Choose **Print**. Alternatively, you may choose to open the file in your system's PDF viewer and customize the printing options there.

18.5.2   Mac

1. In the Report window, click **Save** and save the .pdf file to a known location (such as your desktop).

2. Open that location and double-click the .pdf file. That should Preview the saved report.

3. In Preview, print the report.

We hope that this works for you. However, please do send us a Tech Support request (section 26 on page 78) to let us know about the problem, so we can correct this for you and other users.

After that, you can automate this workaround:

1. Run the T.O.V.A. and choose **Preferences**, **Reports**.

2. Check **Use PDF reader for printing** and click **Save**.

From then on, printing a report will save a temporary file, open your default PDF viewer, and print the report using your default printer/settings.

19   Test Credits

In order to administer a T.O.V.A. test and thus generate a T.O.V.A. report, you must have one or more **test credits** available on your T.O.V.A. USB device. A test credit is used when a test session is saved from the T.O.V.A. USB device.

The T.O.V.A. USB device holds only one test's data, and the test data can only be saved by using a test credit. If you run out of credits, you cannot continue administering tests until you order more. A new T.O.V.A. USB device will contain five test credits, and, therefore, you can administer five tests before you need to order more credits, though you can order more at any time.

Ordering more test credits is easy. How you order will likely depend on if your T.O.V.A. system can connect to the internet.

19.1   Ordering credits online

With an internet connection, ordering credits is easy:

1. From the main window, choose the **Credits** button. The top line of the window will show the number of credits remaining on the attached T.O.V.A. USB device.

2. Under **Credits to order** enter the number of credits you want to order and choose **Order credits**. You will be shown the number of credits to be ordered and the device for which you're purchasing them.

3. Choose **Order** to confirm the purchase.
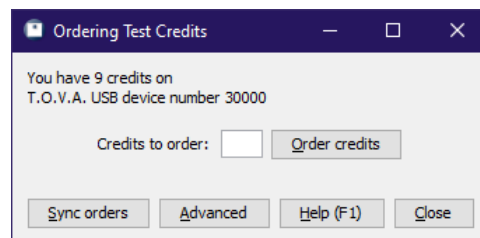
Figure 34: Ordering test credits

Once the transaction is complete, your organization will be billed for your order as previously authorized. If you have questions about billing or pricing, contact T.O.V.A. customer service (see section 26 on page 78 for details.)

19.2   Ordering credits offline

In the T.O.V.A. 8.3, credit ordering is a simple exchange of codes. This exchange is performed automatically if your T.O.V.A. system is connected to the internet. If it is not, you can exchange codes with the T.O.V.A. office by means of email or phone.
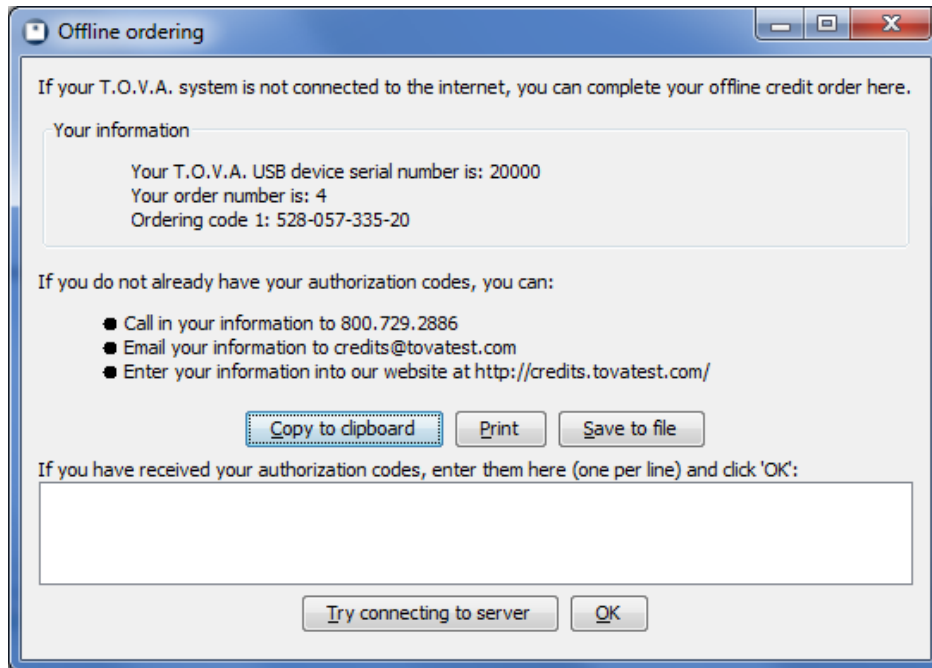
Figure 35: Offline ordering

If your T.O.V.A. system cannot connect to the internet, you will see the Offline Ordering window (Figure 35). At the top, a frame contains **Your information**; this is the information that you will send to The TOVA Company when you are ordering credits (or receiving a service order).

As noted, you can contact The TOVA Company in a variety of ways with your **ordering code(s)**, and we will respond with your **authorization code(s)**. Once you've entered the authorization codes successfully, choose **OK**.

Sometimes you may order credits over the phone or email. If that credit order is initiated by The TOVA Company instead of your T.O.V.A. system, we call that a **service order**. In that scenario, we will send you a service order authorization code, and you will enter it on this same window. When you click 'OK', the code will process, and a new ordering code will appear under **Your information**. It's important that you send that information back to us, via any of those same means (phone, email, website). That will complete the transaction on the server, so that you will still be able to order credits in the future.

Once the transaction is complete, your organization will then be billed for your order. If you have questions about billing or pricing, contact T.O.V.A. customer service (see section 26 on page 78 for details.)

19.3   Service orders

Some users do not order credits directly through the application in the standard way. Instead, they contact us, and we generate a **service order**.

In order to receive credits from a service order, you must either have internet access to your T.O.V.A. computer or receive a **service code** from us. In the latest version, the T.O.V.A. software will synchronize orders between the T.O.V.A. USB device and the T.O.V.A. server automatically. If that fails, you can attempt to sync manually:

1. Attach your T.O.V.A. USB device and run the T.O.V.A. application.

2. Click **Credits** and then **Sync orders**.

If your system is connected to the internet, your device will communicate with our servers, completing the order, and a message should appear with your new total credits available. If your computer is not connected to the internet, the **Offline Ordering** window (section 19.2 on page 48) will instead appear, where you can manually enter the service code(s) received from us. If there is any ordering code to be sent back, it will appear here under **Your information**. You should send that ordering code back to us, via any of the means listed (phone, email, website). This will complete the order on the T.O.V.A. credit servers, synchronizing it with your T.O.V.A. USB device.

For more information, contact T.O.V.A. customer service (see section 26 on page 78.)

19.4   Advanced ordering information

If you encounter a problem with the ordering system, tech support may send you to this Advanced window. This displays your device's information, including all of your device's ordering keys. That information can be sent to us via email from a separate online computer or, if necessary, read out over the phone.

If you do encounter a problem with ordering, there's no need to panic. This window has all the information from your device that T.O.V.A. technical support should need to clear up the situation.

20 Backing up the T.O.V.A. Database

The T.O.V.A. 8.3 maintains all of your subjects' test session data in a database, and it's ***critical*** that you back up your T.O.V.A. data.

20.1 Easy database backup

This is the simplest way to back up all of your data.

1. Run the T.O.V.A. and click **Help**.

2. In the Help window, click **Back up database...**.

3. Choose a destination and click **Save**.

The T.O.V.A. will begin exporting all the sessions in your database to a T.O.V.A. file at the chosen location. To restore from backup, simply import the .tova file as you would any other T.O.V.A. file (see section 21 on page 53 for more information).

Note: If you are using a "Separate" database configuration–separate databases for each user on the computer–you will need to back up each user's database separately.

20.2 Automatic backup

The T.O.V.A. also has an automatic database backup feature. By default, it backs up your database every seven days. See section 24.5 on page 65 for details.

20.3 Back up to the T.O.V.A. server

The T.O.V.A. 8.3 can automatically and securely back up your database to The TOVA Company's servers. This is independent of the automatic local backups, and it can upload test sessions as soon as they are saved or modified. We still recommend you employ other backup solutions as well. See section 24.5 on page 65 for options.

20.4 Other backup options

You can also use your computer's own backup software to back up the database folder. Here's how to find it:

1. From the T.O.V.A. main window, click **Preferences**.

2. In the Preferences window, click **Database** (see Figure 36). Here, you will see the database type (**Separate** or **Shared**) and path.
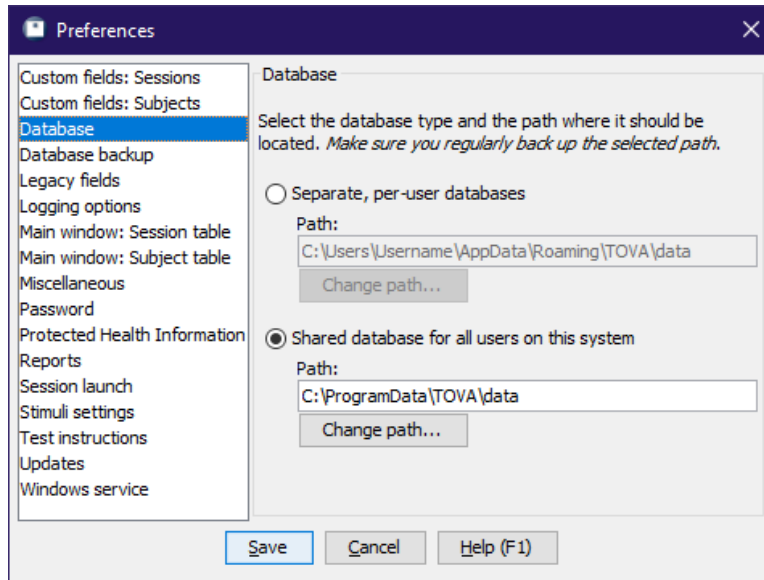
Figure 36: Database options

The path listed here (under the selected database type) is where your database is stored. You will want to back up the entire contents of this path.

Note: If your database type is **Separate**, each user on this system will have their own database. Therefore, you will need to back up *each* of these databases to secure your data.

This does not back up the T.O.V.A. application itself. If your hard drive fails and you have to rebuild your computer, simply re-install the T.O.V.A. software and restore the database to the selected database folder.

If you have specific questions about backing up your T.O.V.A. data, T.O.V.A. technical support (section 26 on page 78) is happy to help! Please call us *before* you lose your data.

21   Importing

The T.O.V.A. 8.3 can import T.O.V.A. 7 data files, as well as T.O.V.A. files exported from other databases (See **Exporting**, section 22 on page 57) and T.O.V.A. backup files. Here's how you do it:

1. On the main window, click **Import**. After an information window, a file selection window will appear.

2. Browse your drives to find the files you want to import. The T.O.V.A. 7 stored files at `c:\tova_7\file`, but your system may be organized differently.

3. Once you've found a folder containing the files you want to import, select them and click **Import**.

4. This is the Import window (Figure 37). Here you can add more files to import, review the results of imports so far, and even specify default values for custom fields. Click **Start** to start the import.

5. Once the import has completed, you've credited any uninterpreted files, and resolved any potential duplicate subjects, click **Close**.
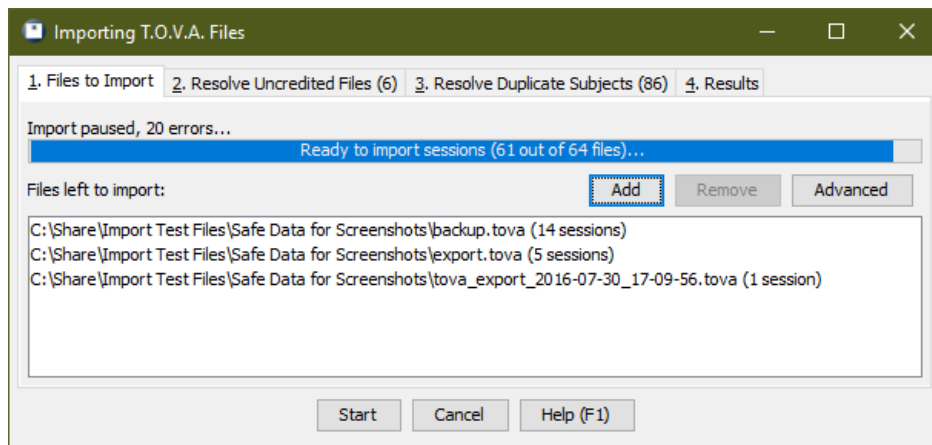
Figure 37: Files to Import tab

The Import interface handles the potentially complex process of importing T.O.V.A. 7 files. At the bottom of the window is the **Start/Pause** button, which starts or pauses the import, and the **Cancel/Close** button, which aborts an import in progress and closes the Import window when importing is complete.

The window is divided up into four tabs. We'll discuss each of these now.

21.1   Files to Import

This is the first tab (Figure 37), where you will see the list of all the files waiting to be imported. Click **Add** to browse and select more files to import and **Remove** if you decide you don't want to import certain files after all. As files are imported, they are removed from this list, and the progress bar at the top will show you how far along the import process is, as well as the status. You can also click **Advanced** to specify values for custom fields.

Note: If you click **Pause**, the import will continue until the current file is finished processing.

21.1.1   Advanced import settings

Here is where you can specify values for custom subject/session fields you may have created. Let's say, for instance, that your organization has three offices: Northwest, Southeast, and Central. It's important to you that you track which tests were administered where, so you created a custom session field named 'Office'. Unfortunately, you have lots of T.O.V.A. 7 data for each of these offices. In this case, you select all the T.O.V.A. 7 files from the Northwest office and add them to your import list. Then you click on **Advanced**, add the 'Office' field, and specify a value of 'Northwest'. Now you start the import, and all of the tests you import will have that 'Office' field set to 'Northwest'. Once that import is done, remove the custom field value, add a new value 'Office='Southeast', click **Close** and import the Southeast batch of files. Once your files have all been imported, you'll be able to sort the main window by the 'Office' field to easily find the subjects and sessions you're looking for.

For more information on custom subject and session fields, see section 24.3 on page 63.

21.2   Resolve Uncredited Files

The T.O.V.A. 7 used interpretation credits, so that after you finished a test you would need to "interpret" ("analyze" or "score" in older versions) the data to see the report or even the raw data. T.O.V.A. 7 files that were never interpreted contain "uncredited" data.

The Resolve Uncredited Files tab lists all these and gives you the chance to either credit the tests and import them or reject them for import.

Note: Importing an uncredited file will use a T.O.V.A. 8.3 test credit. Unless you use a test credit, you cannot import the file.

Note: Crediting a T.O.V.A. 7 file for import will add the test data to the T.O.V.A. 8.3 database, but it will not modify the original, uninterpreted data file. The original T.O.V.A. 7 data file will remain uninterpreted. If you then gave that same T.O.V.A. 7 file to a colleague, they would need to use *another* test credit to import it there.

In that scenario, you should credit and import the T.O.V.A. 7 data file, then export the session as a T.O.V.A. file. T.O.V.A. files *always* contain credited data. For more information about Exporting, see section 22 on page 57.

21.3   Resolve Duplicate Subjects
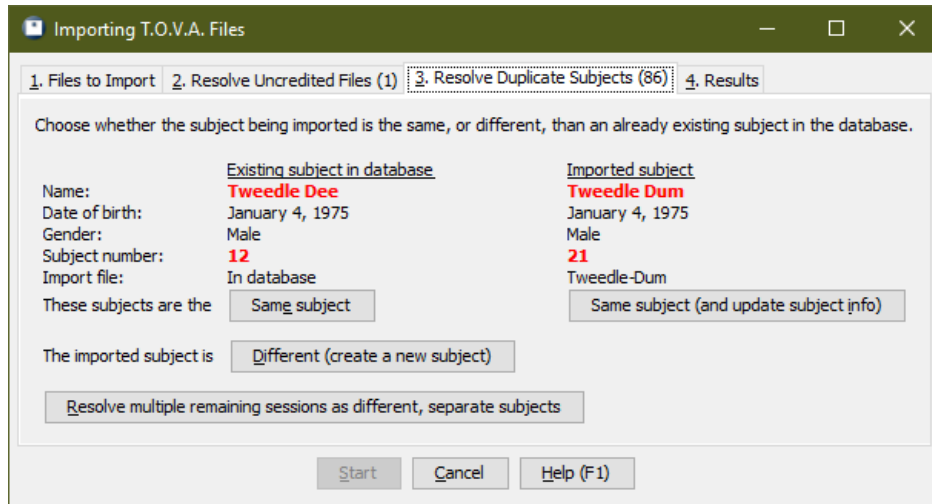
Figure 38: Resolve Duplicate Subjects tab

The T.O.V.A. 8.3 groups all sessions by the subject to whom they were administered. As T.O.V.A. sessions are imported, they are matched to any subjects that already exist in the database. Sometimes the information almost matches up, but not quite. When the import comes to one of these, it will be added to the Resolve Duplicate Subjects tab. The tab label displays the number of potentially-matched imports.

In the example shown in Figure 38, we see that the first name and birthdate are identical, but the last name and subject number are different. You may encounter duplicates like these when you have a subject that sometimes goes by 'John' and sometimes by 'Johnny' or 'Jack'. Other times they really are separate subjects with coinciding information, like a pair of twins. This tab gives you the opportunity to decide if the session should be assigned to the existing subject in the database, if the imported subject information should replace the information in the database, or if the imported subject is a different subject entirely.

Note: If you have dozens of these, this may take awhile. You may choose to **Resolve multiple remaining sessions as different, separate subjects**. This will automatically assume that several of these are different subjects, which is always the safer assumption. You can always search by the subject's birthdate and reassign those test sessions later (section 34.7 on page 123).

21.4   Results

The Results tab gives details on the results of the import. These may include:

- The sessions imported

- The subjects imported

- Any errors (files that could not be imported)

- Any warnings (problems or adjustments that did not cause import to fail)

- Any sessions identified as duplicates and not imported

- Any uninterpreted sessions or potential duplicate subjects - click the link(s) to go to that tab

Use **Copy Messages** to copy the detailed results to your clipboard or **Send to tech support** for help with specific problems.

22   Exporting T.O.V.A. data

The T.O.V.A. 8.3 stores your subjects and test data in a database, but if you need to send data to colleagues or technical support, your T.O.V.A. test sessions can be exported.

Note: You cannot export subjects that don't have any assigned sessions.

The process is simple:

1. Find and highlight the session you want to export on the main window. To export multiple sessions, use **Ctrl**-click (Mac users, **Command**-click) to highlight each additional session, or **Shift**-click to highlight a range of sessions.

2. Click the **Export** button.

3. Modify export options or leave them at defaults and click the **Export** button.

4. If prompted, specify the path and file name for the export file and click the **Save** button.

Your T.O.V.A. data has now been exported to a file.

Note: If you select a lot of sessions, this could take a while, and the T.O.V.A. file could become large. By default, though, exports are ZIP-compressed.

Note: Exporting sessions does not remove them from the database.

22.1   Export options
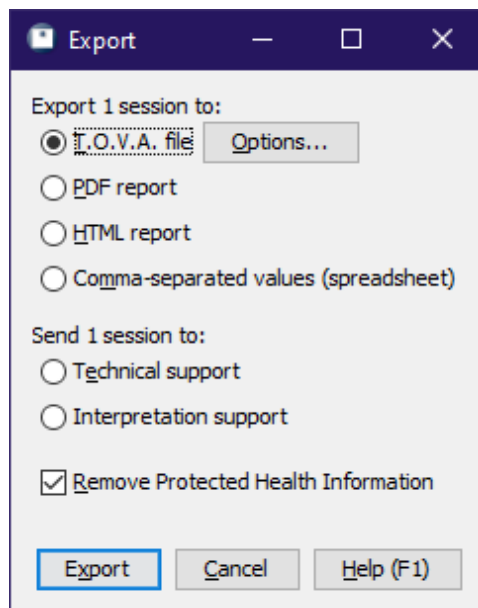
Figure 39: Export options

Let's briefly look over what options we have for exporting T.O.V.A. data.

Export formats - The T.O.V.A. 8.3 supports four export formats:

- **T.O.V.A. file** - This exports the T.O.V.A. data, as well as subject and session data, into an XML format. All the exported data from all the sessions you selected is saved to a single file. That T.O.V.A. file could then be imported (see Importing, section 21 on page 53) into a different T.O.V.A. database.

  The T.O.V.A. file has a few options of its own, available when you choose **Options**:

  ZIP compressed - By default the exported xml is compressed, which can make the file more than 90% smaller than an uncompressed export. De-select this option to export the file uncompressed. Either way, it can still be imported into another T.O.V.A. database.

  Include interpretation - Along with subject/session information and raw test data, a T.O.V.A. file export can also include notes and information from interpretation. If a report contains notes you have questions about, you can send an export of that session to interpretation support.

- **PDF report** - This saves a report of your data to a PDF file, such as you might read or print using Adobe Reader. This can be a good solution for sharing the T.O.V.A. report.

- **HTML report** - This exports an HTML version of the T.O.V.A. report. This is a flexible format, good for copy/pasting into your word processor (such as Microsoft Word). See section 22.2 on page 58 for more.

- **Comma-separated values (spreadsheet)** - This option exports T.O.V.A. data in the form of a .csv file, that can be imported by most spreadsheet applications (such as Microsoft Excel).

  Note: You cannot import PDF, HTML, or CSV files back into the T.O.V.A. 8.3. Only the T.O.V.A. file export can be imported.

Send session(s) to technical/interpretation support - In addition to exporting to a file, you can send the selected sessions with a support request to T.O.V.A. technical or interpretation support.

Remove Protected Health Information - It's important to consider how to keep Protected Health Information private when exporting data. This option is selected by default and leaves out of the import any unnecessary data that might reveal the identity of the subject. Specifically, these are subject names and any custom subject or session fields your database has flagged as personal.

For more information on Custom Subject/Session Fields, see section 24.3 on page 63.

For more information on protecting personal health information, see section 23 on page 60.

22.2   HTML reports

The T.O.V.A. can export sessions into an HTML format. This exports a `.html` file as well as several other linked files to the selected folder on your computer.

The `.html` file will open in your browser (e.g., Chrome, Firefox, etc.) by default. You can then highlight sections of the report with your mouse (including tables and graphs), copy the content (usually with **Ctrl+C**), then paste it into Microsoft Word, your email client, or some other program (usually with **Ctrl+V**). Browsers and other applications vary, but trial-and-error will show you what works best. We welcome your feedback (section 26 on page 78) on how we can improve this feature.

22.3   Opening T.O.V.A. files

If a colleague sends you a T.O.V.A. file, you can double-click on the file to **open** it in the T.O.V.A.
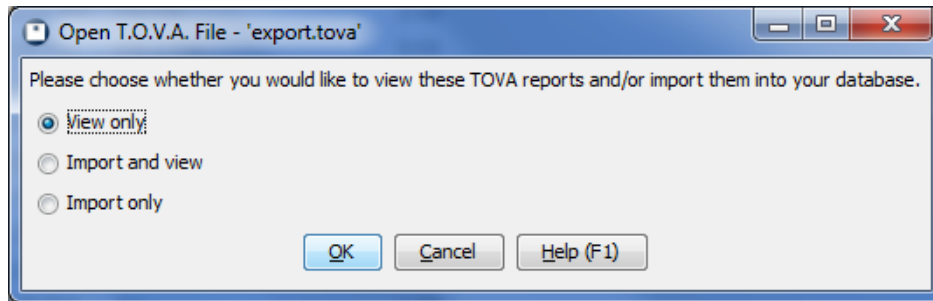
Figure 40: Opening a T.O.V.A. file.

When you do, you will be prompted to view reports of the sessions contained in the file and/or import them into your T.O.V.A. database. The T.O.V.A. will only view the first 10 sessions in a file. To view more reports than that, import the sessions first.

23   Protecting Health Information

The United States Health Insurance Portability and Accountability Act (HIPAA) has had far-reaching consequences, as we're certain you know. We've designed some features to help you fit the T.O.V.A. 8.3 into your HIPAA-compliance procedures.

- The T.O.V.A. provides a Business Associate Agreement (section 23.1 on page 60).

- Subject names can be optionally left off of reports ().

- Custom fields you create can be flagged as **Protected Health Information**.

- Choosing **Hide Protected Health Information** in the Preferences (section 24.11 on page 68) will leave Subject Name and other protected fields off of the main window, the session screen, and all reports, and never write it to the T.O.V.A. USB device.

- Protected fields are left out of exports by default (section 22.1 on page 57).

- Protected fields are left out of technical and interpretation support exports by default (section 26.4 on page 79).

- Subject names are not required. The only required individually identifiable health information is the subject's **date of birth** and **gender**. If you want, you can leave names out of the T.O.V.A. entirely and use subject numbers to identify subjects anonymously.

- The T.O.V.A. application can be password-protected.

- The T.O.V.A. database path should be restricted to authorized users, if the computer is ever shared with unauthorized users.

The T.O.V.A. 8.3 has only limited built-in security. Instead, the T.O.V.A. 8.3 assumes that your organization has standard physical and computer security measures in place that meet HIPAA requirements.

If you need more information, please contact T.O.V.A. technical support (section 26 on page 78).

23.1   Business Associate Agreement(BAA)

The TOVA Company wants your T.O.V.A. data to be secure and private. Organizations covered by United States HIPAA regulations should have a Business Associate Agreement (BAA) with any company that might be exposed to their patients' Protected Health Information (PHI). Because The TOVA Company may encounter PHI in the course of assisting you with support, backups, etc., we provide a Business Associate Agreement.

You do not have to accept this agreement. You can send us a different agreement which we can review and accept or decline, or you can decline any BAA with The TOVA Company altogether. If you do not accept an agreement, several features of the T.O.V.A. software will be limited or disabled:

- Securely uploading database backups to TOVA Company servers (section 20.3 on page 51)

- Advanced technical support

- Advanced interpretation support

- Direct remote support (connecting to your computer to assist with problems)

The T.O.V.A. software will provide you prompts to accept the T.O.V.A. BAA, but you must have Administrator access to your computer in order to accept or decline the agreement. The BAA should only be accepted by someone who has the authority to do so on behalf of your organization.

If your organization is not covered by United States laws, you can choose to either enable or disable these features. Please check your local privacy regulations and choose accordingly. If The TOVA Company is required to adhere to specific privacy laws in order to access personally identifiable data, please forward the appropriate agreement/contract to The TOVA Company for The TOVA Company's consideration.

24   Preferences

The Preferences window is where all the T.O.V.A. settings are managed. Choose the category you are looking for on the left and the settings for that category will be displayed. Choose **Save** when you've finished making your changes.

Note: Preferences available may vary based on your operating system, hardware, system language, etc. Contact T.O.V.A. tech support if you have questions.

24.1   Admin Preferences

Some T.O.V.A. settings require Admin privileges to change. Even if your login is an Administrator on the system, the T.O.V.A. application may run without Admin privileges (this is the default behavior in Windows).

These restricted preferences can only be modified from **T.O.V.A. Admin Settings** (section 34.5 on page 121).

Note: Some preferences that *can* be modified in the T.O.V.A. application are *not* accessible in **T.O.V.A. Admin settings**.

24.2   System Preferences
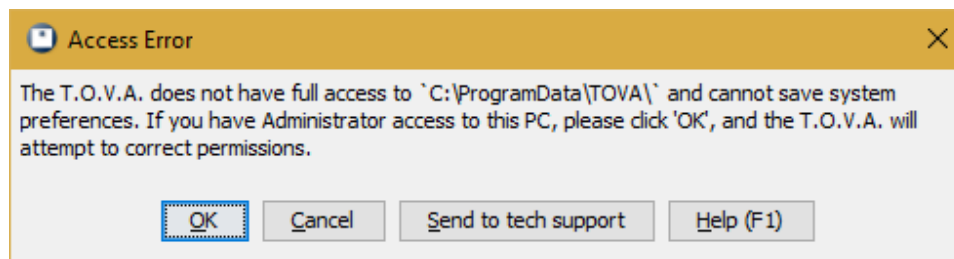
Figure 41: The T.O.V.A. needs full access to the shared TOVA folder

All T.O.V.A. System preferences (as opposed to Admin preferences) should be fully accessible to all T.O.V.A. users. If the T.O.V.A. is unable to write to files in the shared TOVA folder, you may be prompted to let the T.O.V.A. application fix the problem.

If you encounter this error (Figure 41) and you have Administrator access to your Windows PC, click **OK** and grant the T.O.V.A. access to make changes to your computer.

Mac users: This built-in function is currently only available for Windows. If the T.O.V.A. reports "Your system preferences couldn't be saved.", there's a script on your T.O.V.A. flash drive that can correct the problem:

1. Close the T.O.V.A. application.

2. Insert the TOVA CD, which will show up as volume **TOVATEST**.

3. Go to the 'utilities' folder on the T.O.V.A. CD.

4. Open the **Fix Mac Permissions** command script. This will open a Terminal window to run the script.

5. Blind-type your Mac user account password when prompted for authorization. (If you don't have one, get an administrator of this computer to run the script from their account.)

6. When finished, close the Terminal window and start the TOVA application.

Please contact T.O.V.A. technical support if you continue to have permissions issues (section 26 on page 78).

24.3   Custom fields: Subjects and Sessions
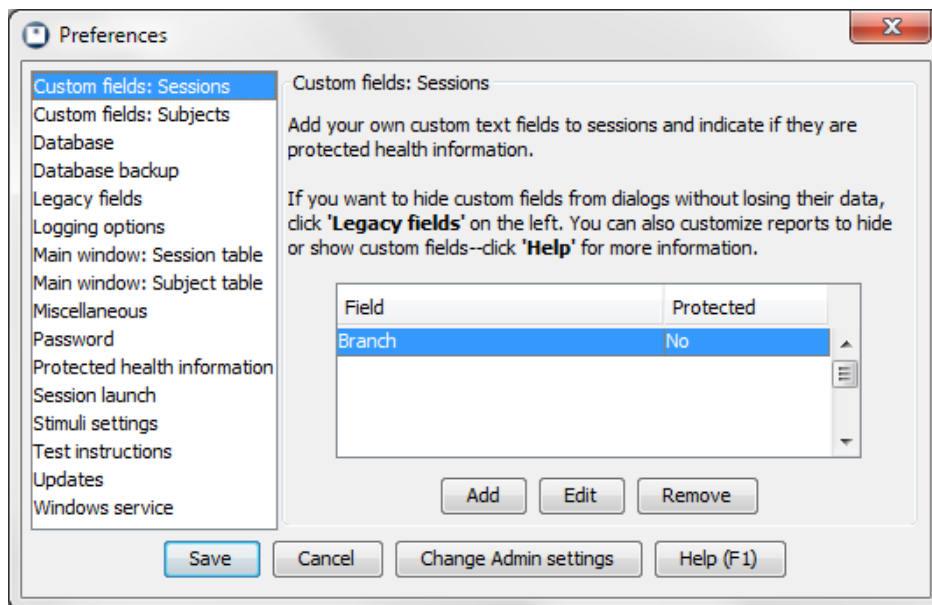
Figure 42: Custom Subject Fields

The T.O.V.A. 8.3 allows you to add your own fields to the T.O.V.A. database and display the information on reports and the main window. This can be of particular use to researchers.

In the **Preferences** window, you can **Add** new custom fields, select and **Edit** them, or **Remove** fields you no longer want. Custom fields can be flagged as containing **Protected Health Information**, in which case they will be removed or hidden along with Subject Name when appropriate (see section 23 on page 60 for more information on PHI).

- Custom fields are treated as plain text and limited to 255 characters; you can use them to store numeric values or dates, but they will be sorted as text.

- Removing a custom field will remove all data entered into that field for all subjects or sessions. If you just want to hide the field from reports, customize the report (section 18.1 on page 42). If you want to hide the field when entering new subjects or sessions, designate it a **'Legacy field'** (section 24.6 on page 66).

There are two kinds of custom fields: subject and session. Subject fields follow the subject through all of their sessions, whereas session fields apply to a specific T.O.V.A. test session. Let's say you're doing a study

of how "Hair length" affects attention and impulsivity. While length of hair applies to a subject, it could easily vary between sessions. The first time you test Tina Anderson, she may have long, flowing hair, but by the time you test her again, she may have cut it short. Therefore, you should add "Hair length" as a session field, not a subject field. Conversely, "Eye color" should be a subject field as it is unlikely to change over the course of one's life.

24.3.1   Why can't I see my custom fields?

By default, custom fields will not appear on the main window or report. To add them to the main window, see **Subject/Session Table fields**, section 24.8 on page 67. To add them to the report, see **Customizing the Report**, section 18.1 on page 42.

24.4   Database

Note: *Some of these settings are Admin preferences (section 24.1 on page 62).*
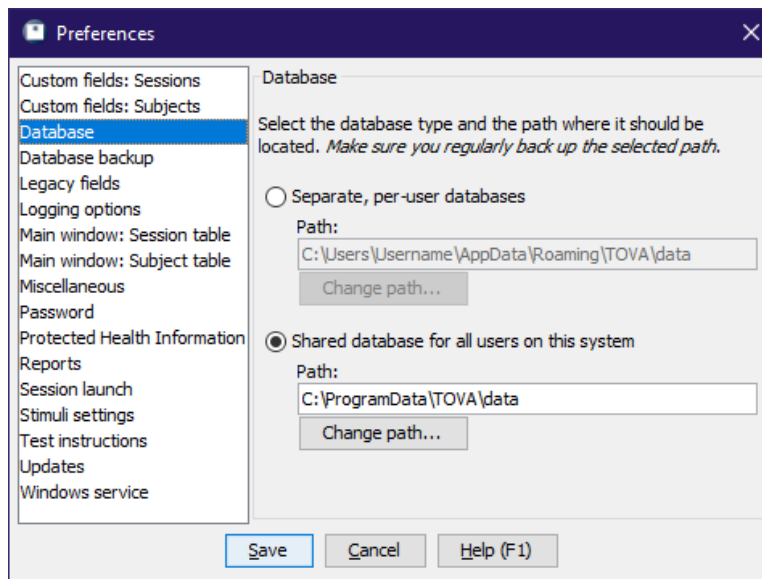
Figure 43: Database options

The T.O.V.A. 8.3 stores all of your T.O.V.A. test sessions in a database. There are two database configurations you can choose from:

Shared - All of the users (clinicians, testers, etc.) on your computer will use the same database. This is the default database configuration and works well if everyone using the T.O.V.A. on the system wants access to the same subjects. By default, a shared database will be stored here:

> **Windows default path:** `C:\ProgramData\TOVA\data`
>
> **Mac default path:** `/Users/Shared/TOVA/data`
>
> **Linux default path:** `/var/lib/TOVA/data`

Separate - Each user on your computer will have their own database. This arrangement is best when there are multiple professionals administering the T.O.V.A. on the same system and they want to keep their

subjects' data separate from each other. **Note:** This is based on your OS's login; the T.O.V.A. does not keep its own list of users, so if you all log into Windows using the same username and password, you will still all have the same database. By default, a separate database will be stored here:

Windows default path: `C:\Users\<username>\AppData\Roaming\TOVA\data`

Mac default path: `<your home directory>/Library/Application Support/TOVA/data`

Linux default path: `<your home directory>/.tova/data`

See section 34.6 on page 122 for more information on changing your database path.

24.5   Database Backup

Note: *These are mostly Admin preferences (see section 24.1 on page 62).*
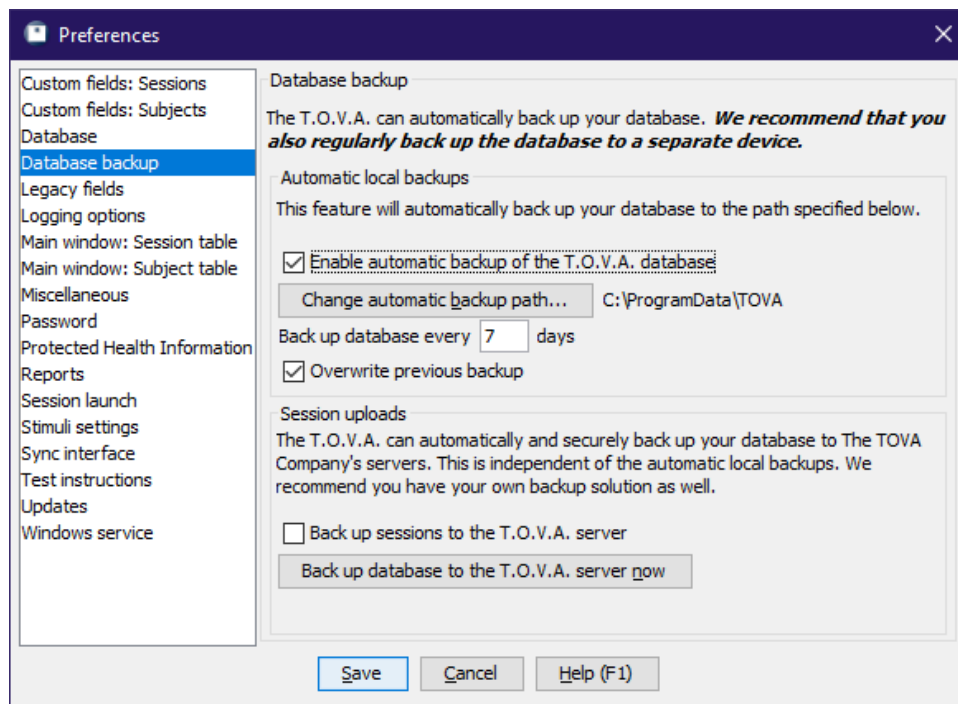
Figure 44: Back up your database automatically

We have always encouraged users to back up their T.O.V.A. database themselves (and continue to do so), but now you have new backup options:

- **Automatic backups** - By default, the T.O.V.A. 8.3 backs up your database every seven days to a single file in your database path that starts with `autobackup-complete-.tova`. The **Database backup** section of the T.O.V.A. preferences lets you disable this feature or choose a different backup path. You can choose to back up more or less often (e.g., every 7 days or every 90 days). If you change this interval to **0** days, the T.O.V.A. will back up your database every time you start the T.O.V.A. application! Finally, you may uncheck **Overwrite previous backup**, and the current date will be appended to your backup's filename, so that backups from previous days will not be overwritten.

- **Back up sessions to the T.O.V.A. server** - When you enable this feature, the T.O.V.A. will securely upload a backup of your entire database to The TOVA Company's servers. As you administer

new sessions, the T.O.V.A. will continue these backups automatically. This is independent of the automatic local backups, and it is turned off by default. If you have blinding enabled (section 35.7 on page 135), you will have separate options for uploading blinded and non-blinded sessions.

This feature requires an internet connection, of course. Because this data may contain Protected Health Information (PHI), all data is encrypted and transmitted using the latest security protocols. To recover backups uploaded to the T.O.V.A. server, just send us a Technical support request (section 26 on page 78).

You can also click **Back up database to the TOVA server now**, and a full backup of your entire database will be uploaded to The TOVA Company server.

- **Manual backup** - You can easily back up your database manually—see section 20.1 on page 51 for details.

24.6   Legacy fields

A field is designated as a **legacy field** if it is no longer being added or edited for new or existing subjects or sessions, but it is kept around for historical purposes. For instance, **Height** and **Weight** were fields in the T.O.V.A. 7, but are not used in the T.O.V.A. 8.3. When you import T.O.V.A. 7 files, any height and weight data will be imported as well, but you cannot edit these fields.

If you decide you want to be able to add or edit Height or Weight in the T.O.V.A. 8.3, you should de-select these as Legacy fields. Conversely, if your colleague shares a T.O.V.A. file with you that contains a **Hair length** field, you may wish to designate that a legacy field, so that it will not appear as a field the next time you start a new session.

24.7   Logging options
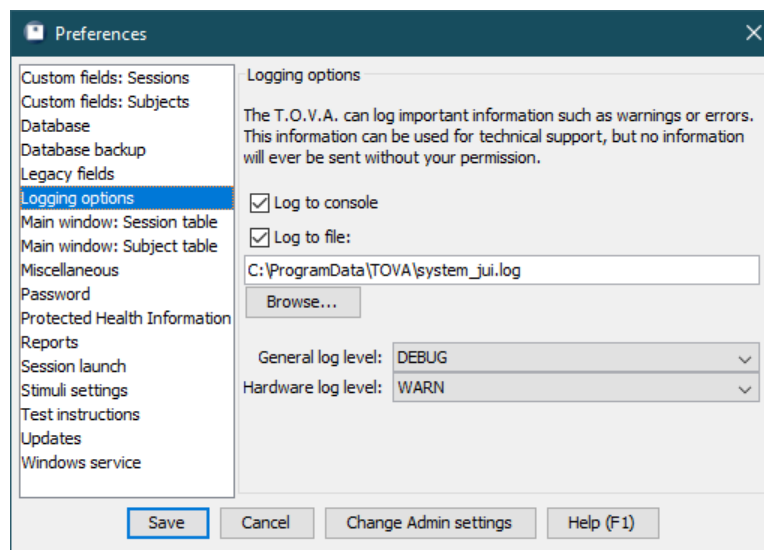
Figure 45: Logging options

Logging is a very useful tech support tool for the T.O.V.A. 8.3. By default, the log will record in a file all error messages you may encounter in the T.O.V.A. By adjusting the settings, you can record more or less information, or none at all, if you choose.

You can specify what information should be logged (by importance/severity), where your T.O.V.A. log file will be stored, and how logging will be performed. Generally, T.O.V.A. users will not want or need to modify these settings from their defaults unless asked to do so by T.O.V.A. technical support.

The T.O.V.A. 8.3 log, as well as other relevant system information, can be sent to T.O.V.A. technical support through our support request feature (section 26 on page 78). The TOVA Company will not collect any information from your system without your consent.

24.8 Main window: Subject/Session Table

With the Subject and Session Table preferences you can select which fields will or will not appear on the main window Subject and Session tables. The Subject table can display any or all of the default Subject fields, as well as any custom Subject fields. The Session table, likewise, can contain all of the default and custom Session fields, as well as all the Subject fields. Select the fields you want to see when browsing subjects and sessions and keep unnecessary information from cluttering your interface.
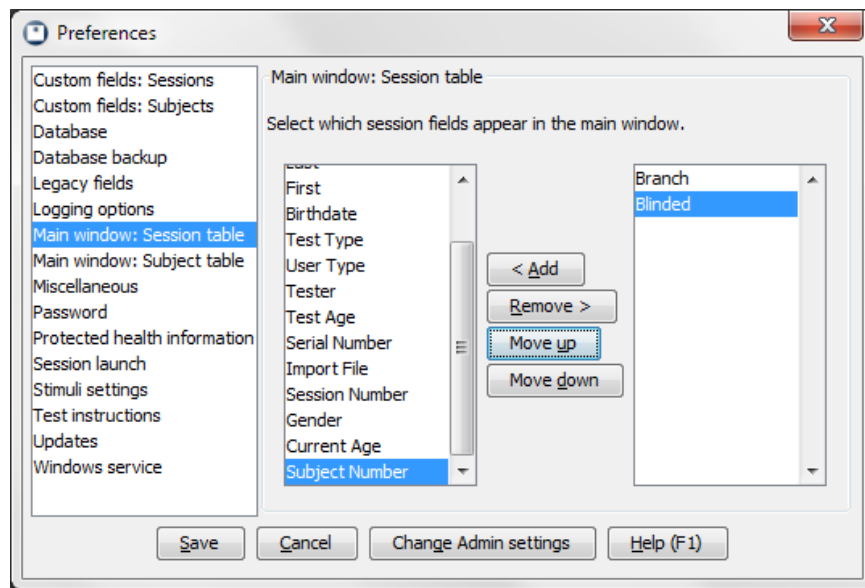
Figure 46: Session Table fields

Note: Even if a private field is added, it will not appear if PHI is hidden (see section 24.11 on page 68).

24.9 Miscellaneous

Note: Some of these settings are Admin preferences. You may need to run **T.O.V.A. Admin Settings** (see section 24.1 on page 62) to modify them.

This is our grab bag of system preferences that didn't belong elsewhere. You would do best to ignore this section until and unless you actually need it.

- **Automatic test date/time** - Most users will want to use their system clock to automatically set the Test Date/Time. If your system clock is bad, uncheck this setting to set the Test Date/Time manually. We recommend you fix your system clock instead. **Note:** If your system does not hold the correct time, it usually indicates your system has a bad CMOS battery. This can cause continuous problems.

You should consider replacing the battery or using a different system to administer the T.O.V.A. in the future.

- **Default to offline ordering** - Some T.O.V.A. systems have internet connections that don't work for online ordering, but ordinarily the T.O.V.A. would continue to try to order credits online. When checked, this tells the T.O.V.A. to use offline ordering only. It can also be helpful for fixing some ordering issues.

- **Include blinded subjects** - See section 35.7 on page 135 for information on this setting. ***Please do not enable this feature unless directed by T.O.V.A. technical support or by those managing your study.*** Contact T.O.V.A. Customer service (section 26 on page 78) for more information.

- **Current subject number** - Let's say you want to start numbering all your new T.O.V.A. subjects at 20000. This is where you do that.

  Note: By default, **Subject number** is considered a "legacy field". It will not be available for editing until you deselect it under Legacy fields (section 24.6 on page 66).

24.10   Password

Note: This is an Admin preference (see section 24.1 on page 62).

If there are users on your system whom you don't want accessing the T.O.V.A., here you can set a password for the app. This is a system-wide password and, of course, may only be set or removed by an administrator.

Note: This password only controls access to the T.O.V.A. 8.3 application. Securing your T.O.V.A. data is a function of your operation system, through user-access levels and file/directory permissions, and while the T.O.V.A. accommodates this, the T.O.V.A. software does not itself encrypt or restrict your data.

24.11   Protected Health Information

Note: Some of these settings are Admin preferences (section 24.1 on page 62).

If you are using the main window (where you browse subject information) in view of your subjects, you may want to hide Protected Health Information from view. Choosing **Hide Protected Health Information** will leave Subject Name and other protected fields off of the main window, the session screen, and all reports, and never write it to the T.O.V.A. USB device.

You also have an option here to not **Display subjects and sessions on startup and blank search**. Deselecting this option means that until you enter search criteria, the main window will display *no* subjects or sessions, instead of *every* subject and session, which is the default behavior. In addition to not revealing PHI, this makes starting up the T.O.V.A. faster, especially if you have a lot of subjects in your database.

Finally, this panel notes whether you've accepted the T.O.V.A. Business Associate Agreement (BAA) and provides an option to review and accept or decline it. **Note:** Accepting or declining the Business Associate Agreement requires you to have Administrator access to your computer.

See section 23 on page 60 for more information on protecting personal health information.

24.12   Reports

The settings here simply mirror those available in the **Customize Report** window (section 18.1 on page 42).

24.13   Session launch

Your session launch options determine which session type will be launched and how. You can modify these session launch options in the Preferences window (section 24 on page 62) or for a single session by clicking **Options** in the **New Test Session** window (see section 17.4.2 on page 34);

24.13.1   Session type

You will always launch a T.O.V.A. session the same way, by creating a new session and clicking the **Launch** button. The first option here is to choose what type of session you will launch.

If this is an EAV test session, launching a session will immediately bring up the EAV session screen. Launching a PTE session, on the other hand, requires rebooting your computer.

- For more information on session types, see section 29 on page 101.

- For more information about the PTE, see section 31 on page 103.

- For more information about the EAV, see section 30 on page 102.

24.13.2   PTE options

If you choose to test with the PTE, there are several mechanisms for doing it. The available options will vary, based on your computer and its configuration.

- **Automatic** *(Windows default)* - When you click **Launch**, the T.O.V.A. will analyze your computer, then modify your system's boot configuration to trigger the PTE when you reboot. If this method does not work for your system, or if you prefer that the T.O.V.A. not make changes to your system's boot configuration, consult T.O.V.A. technical support (section 26 on page 78) for other options.

  Note: On some Windows 7 systems, the **Automatic** option is not available, and you'll need to use a T.O.V.A. CD or flash drive instead.

  Note: Many Windows PCs require a T.O.V.A. flash drive (the USB thumb drive with the blue TOVA logo) to boot the PTE automatically. If you do not have your T.O.V.A. flash drive, you may use your own FAT32-formatted USB drive or SD card.

  1. Insert the flash media.
  2. In the Session launch preferences, select **ESP with flash drive**.
  3. Next to **ESP with flash drive**, click **Select drive...**.
  4. In the **Choose a Drive** window, click the **Eligible drives** drop-down, select your inserted drive, and click **OK**. The T.O.V.A. application will copy the necessary files to your drive, which may take a few minutes. When it's finished, you should see the name of your drive next to the **ESP with flash drive** option.
  5. Confirm that under **Reboot the computer...**, **immediately** is selected, then click **Save**.
  6. Finally, **Try out the PTE** to make sure your new boot method works (section 31.1.2 on page 104).

- **EFI System Partition (default)** - *(Mac default)* This option will boot the PTE from images copied to your computer's EFI System Partition.

- **ESP (EFI System Partition)** - This option will boot the PTE from images copied to your computer's EFI System Partition.

- **ESP with flash drive** - This option will configure the PTE to boot from your ESP and T.O.V.A. flash drive. If you no longer have your T.O.V.A. flash drive, you can click **Select drive...** to choose your own attached FAT32-formatted USB drive, so long as it has about 500 MB free. Contact T.O.V.A. tech support for assistance.

- **ESP with path** - This option will boot the PTE from a root image placed where you specify. By default, this is your T.O.V.A. application install path, but you can choose another if your install path is encrypted. (The T.O.V.A. cannot access the root image on an encrypted drive.) Consult T.O.V.A. Tech Support (section 26 on page 78 before choosing this option.

- **Use boot CD** - Choose this option to boot the PTE with a T.O.V.A. CD. This option may require additional steps or configuration. Contact T.O.V.A. tech support for assistance. **Note:** Make sure to always update your CD (section 32.3 on page 111) when you update the T.O.V.A. software.

- **Use flash drive** - Choose this option to boot the PTE with a T.O.V.A. flash drive (the small metallic thumb drive). This option may require additional steps or configuration. If you no longer have your T.O.V.A. flash drive, you can click **Select drive...** (Windows only) to choose your own attached FAT32-formatted USB drive, so long as it has about 500 MB free. Contact T.O.V.A. tech support for assistance.

- **Use legacy PTE** - Choose this option to boot the legacy PTE on a Mac from a T.O.V.A. CD or flash drive. This option may require additional steps or configuration. Contact T.O.V.A. tech support for assistance. **Note:** Make sure to always update your CD (section 32.3 on page 111) when you update the T.O.V.A. software.

- **Windows boot menu** - This option can be useful if your older computer has issues with the T.O.V.A. service and automatic booting. It configures your system to always start up with a boot menu for 30 seconds, giving you time to choose to boot Windows or the T.O.V.A. Precision Test Environment. We don't recommend choosing this option unless specifically directed by T.O.V.A. technical support.

It's best to try the default options first. See section 31.1 on page 103 for information and instructions on trying out the PTE.

24.13.3   Reboot options

To launch a PTE session, you will always need to reboot your system. This will happen automatically when you click **Launch**. But if you choose to reboot **later**, the T.O.V.A. will exit but not reboot, so you can reboot your system yourself later.

Alternatively, if you are trying to boot to a T.O.V.A. flash drive on a Windows 8, 10, or 11 computer, choose **Boot Options Menu**. This will take you to a special Windows menu; choose **Use a device** and trigger the T.O.V.A. flash drive to boot.

If that option doesn't work, you might choose to reboot the computer "yourself after the system shuts down". This will power down your computer instead of rebooting it, so that you can power it on and press a special key to trigger the boot device menu. Consult T.O.V.A. technical support (section 26 on page 78) for more information.

24.13.4   Check PTE boot media

The T.O.V.A. will check and update T.O.V.A. boot media when you launch a PTE test session. If directed by tech support, choose this option to bypass those functions.

24.14   Stimuli settings
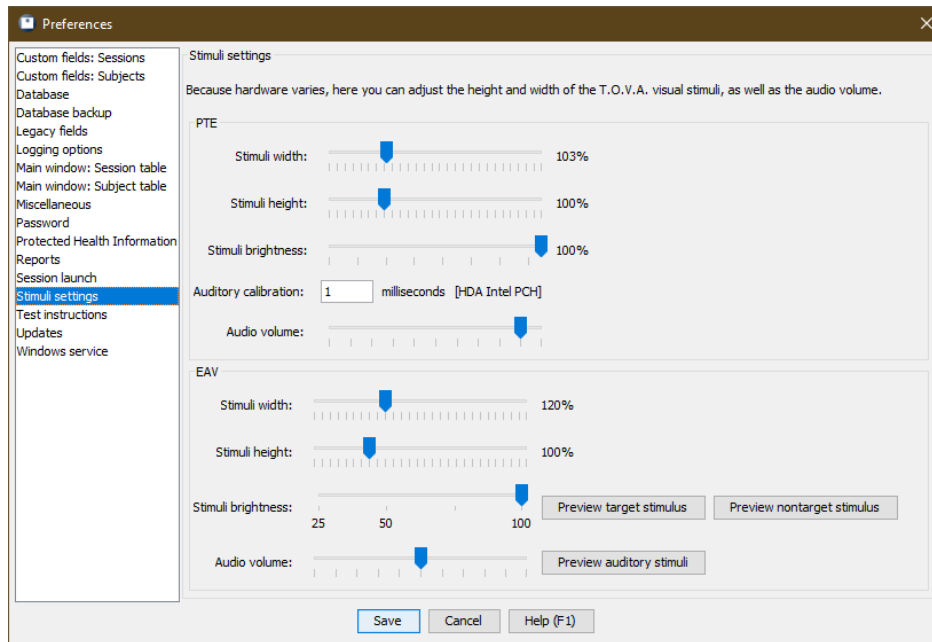
Figure 47: Stimuli settings

These are the settings the T.O.V.A. will use to size the stimuli for the visual test, as well as simple volume adjustments for the auditory stimuli. The visual T.O.V.A.'s stimuli are two easily discriminated geometric figures centered on the computer screen (Figure 48).
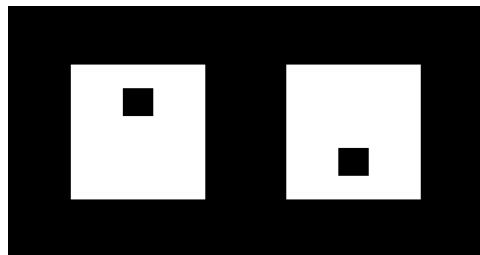
Figure 48: T.O.V.A. Stimuli, Target and Nontarget

The visual T.O.V.A. was normed using stimuli under the following conditions:

- A 12-inch screen (measured diagonally)

- An eye-to-monitor distance of roughly 36 inches

- Stimuli appear as 3-inch squares (measured diagonally)

- Stimuli presented near the subject's eye level

These are the recommended conditions; however, monitor size, type (standard or widescreen), resolution, and distance from the subject's eyes may vary. Target size is important for the following reasons:

- Stimuli that are too small (or too far away) can be visually fatiguing. Since the T.O.V.A. is a test of attention, not visual acuity, the subject must be able to easily discern the target and nontarget stimuli for results to be valid.
- Stimuli that are too large (or too close) require large eye sweeps to discern targets from nontargets. Eye sweeping can slow response time and be visually fatiguing. The subject should be able to see the complete stimuli and screen all at once, without having to sweep their eyes to discern the target/nontarget.

Most computer configurations are well within these parameters. However, some laptops, LCD monitors, or other widescreen displays may not have the capability to "expand" the T.O.V.A.'s smaller VGA testing screen resolution to an appropriate size. This can result in a "miniature screen" in the middle of a larger monitor, and the stimuli are subsequently very small on the screen. To address situations such as this, the T.O.V.A. software has these scale adjustment settings.

It is recommended that you closely approximate the three-inches-diagonal measurement. If the adjustments here are not sufficient to display the stimuli properly, we recommend that a different monitor be used for T.O.V.A. testing.

Stimuli for the auditory test are two easily discriminated audible tones: the target is G above middle C, and the nontarget is middle C, played though external speakers placed on either side of the display. Since the T.O.V.A. should always be administered in a quiet location, free from distraction (it *is* a test of attention), the volume need only be adjusted to a comfortable level.

The very first setting on this panel we will mention last. **Auditory calibration** is used to adjust test timing to the slight delay (about 3.5 ms) that occurs when using USB speakers. If you are directed by technical support to use USB speakers, we will give you the appropriate value to be entered here. If you are not using USB speakers, this value should be left alone.

24.15   Sync Interface

Note: These settings only appear if you have a T.O.V.A. USB device with the sync interface attached.
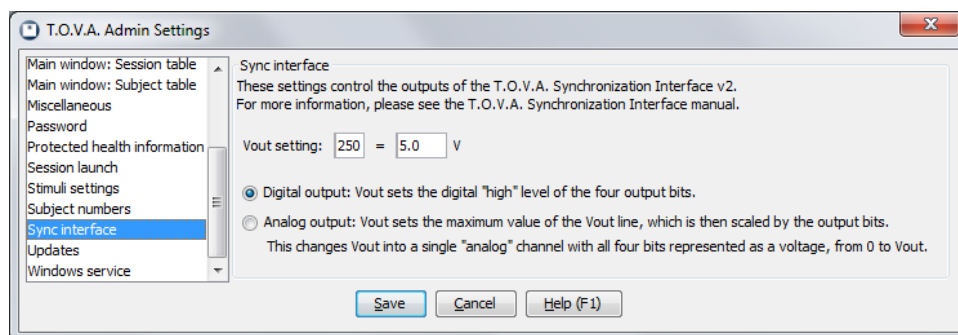
Figure 49: Sync Interface settings

Here you can configure the settings for the Sync Interface output during the T.O.V.A. test. For more information, see the **T.O.V.A. Synchronization Interface manual**.

24.16   Test instructions

Here is where you can change the default settings for the T.O.V.A. multimedia test instructions (see section 33 on page 113 for more information).
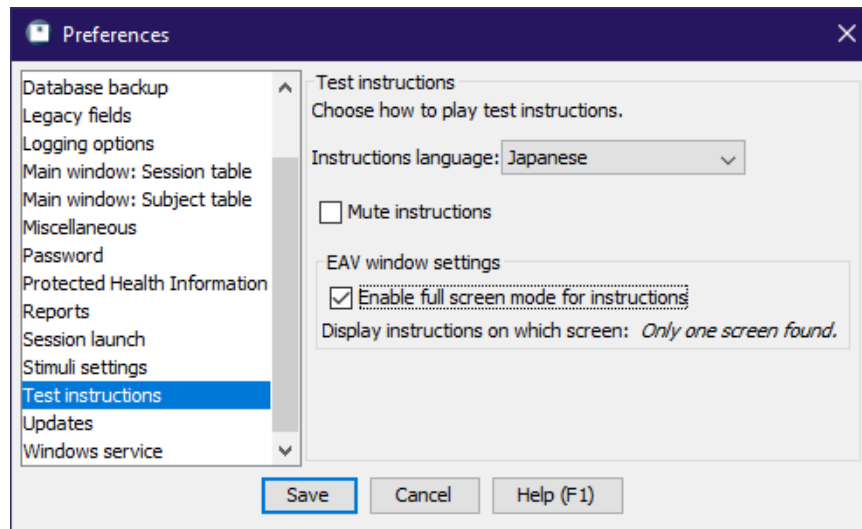
Figure 50: Test instruction options

- **Instructions language** - The T.O.V.A. can give test instructions in several different languages. This setting applies only to test instructions, not to any other part of the user interface. **Note:** Some languages are not available in the legacy PTE.

- **Mute instructions** - If you choose to mute the test instructions, you will need to manually step through the instructions. This may be useful if you find that the instructions are spoken too quickly for your subject to understand.

- **Enable full screen mode for instructions** - Some Windows systems had problems with the test instructions, so we've disabled that full screen mode by default. The change makes it easier to switch away from the T.O.V.A. multimedia instructions to another application, so re-enable this if you like.

- **Display instructions on which screen** - If you have multiple screens or a laptop with an external monitor, this lets you select on which screen to display the test instructions, with the first display numbered '0'. **Note:** You need to be using the two as separate screens—"extended desktop", not "mirroring"—for this setting to function.

If you just need to change these settings temporarily for the session you're about to give, click **Instructions language** from the New Test Session window (section 17.4 on page 33).

24.17   Updates

Note: *Some of these settings are Admin preferences (section 24.1 on page 62).*

All T.O.V.A. customers are entitled to free software upgrades, and we can send you updates automatically when we fix bugs or add new features.

Note: While you may or may not elect to download T.O.V.A. updates automatically, we never install an update without asking permission.

When you install or update the T.O.V.A. software, we like to collect information about your hardware and configuration. This helps us understand how our customers use the T.O.V.A. software and provide tech support if you encounter a problem. Here, you can opt not to send this information.

24.18   Windows Service

Note: This setting only appears on Windows systems.

Most Windows systems that test with the PTE (section 29 on page 101) use an "Automatic" method, so they don't require manual steps for testing. These employ the T.O.V.A. PTE Activation service (section 35.6 on page 132) to boot the PTE.

If you are having problems with the T.O.V.A. service, you can disable communication with it, which prevents service-related messages from appearing. However, the T.O.V.A. will regularly prompt you for permission to perform the tasks that the service would normally perform in the background. Please see section 35.6.2 on page 133 for more information or contact T.O.V.A. tech support for help in resolving service issues (section 26 on page 78).

25   The Status Window

The Status window is available from the main window by clicking the **Status** button. The purpose of this window is to alert you to possible problems with the T.O.V.A. and provide simple solutions.
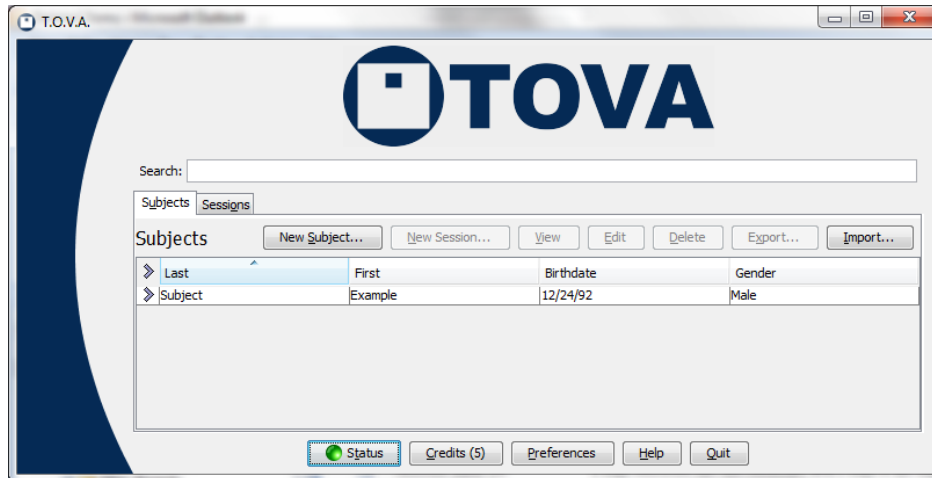
Figure 51: A green Status button indicates no known issues.

To help in identifying problems, the Status window uses condition colors:

Green - The condition is just fine. If the Status button on the main window is green, you should have no problem using the T.O.V.A.

Yellow - This color alerts you to important conditions, such as running low on T.O.V.A. credits, a notification from customer service, or an available software update.

Blue - The condition is unknown–the status is still being checked.

Red - There is a problem that will most likely prevent further testing. This could be an urgent notification from customer service or an error with the T.O.V.A. service. In many cases, this can be easily resolved, but if you cannot, you should contact T.O.V.A. technical support soon.

Black - The condition of this category is unavailable. If there's no internet access, for instance, the T.O.V.A. can't check online for updates.

Light Gray - This function has been disabled in the Preferences (section 24 on page 62).

If the **Status** button on the main window is green, everything should be working. If it's yellow or red, click the button for more specific status information and solutions.
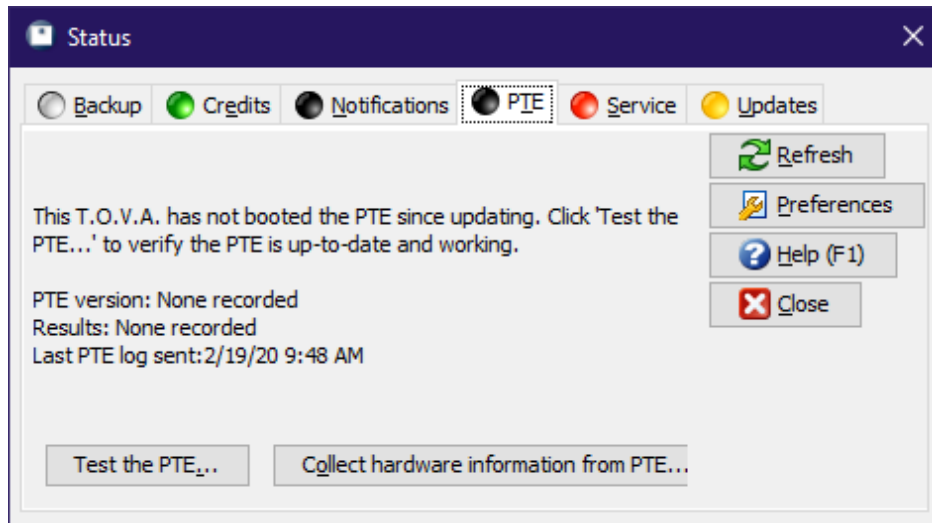
Figure 52: Colors indicate the condition of status categories

Each category pane has several standard options:

Refresh - Recheck the status of the category

Preferences - Modify related preferences (if any)

Help - View the User's Manual section on this category

Close - Close the Status window

In addition to these, status panes often have other buttons available.

25.1   Backup

Here is where you can see when your T.O.V.A. database was last automatically backed up. Click **Preferences** to change your automatic backup options (see section 24.5 on page 65 for more information on new backup features).

25.2   Credits

This pane of the Status window can tell you if you are low on credits or if there is session data that should be saved. The category will be unavailable (black) if there is no device attached. See section 19 on page 48.

25.3   Notifications

Notifications are a way The TOVA Company can contact you about account support issues. Accounts are linked to T.O.V.A. USB devices, so to receive notifications you must have internet access and a T.O.V.A. USB device attached. You can **Delete** messages once you have addressed them.

25.4   PTE

This pane warns you if your Precision Test Environment (PTE, section 31 on page 103) was out-of-date and provides an option to **Try out the PTE...**. This usually indicates you need an updated boot CD (section 32.3 on page 111) or flash drive (section 32.2 on page 110). It will also inform you if there is a log from the PTE that you can send to T.O.V.A. tech support.

25.5   Service

(Windows only)

The T.O.V.A. Windows service provides access to system functions, such as modifying system boot settings and installing software updates, that are not accessible to all users. This pane communicates any problems with the service and provides options such as restarting the T.O.V.A. service or opening the Windows service console. See section 35.6 on page 132.

25.6   Updates

This pane will alert you to an available software update or tell you if a previous update failed. See section 27 on page 82.

26   Getting Help

The TOVA Company is committed to helping our customers however we can to use the T.O.V.A. That's why you can reach out to us right from the T.O.V.A. application. The Help window (click **Help** from the main window) contains three buttons to contact The TOVA Company:

Technical Support - Confused about an error message? Something not behaving correctly? You can contact The TOVA Company's **free technical support** here. Plus, you can easily send us screenshots, system information, and logs, and even attach sessions to help us find the solution.

Interpretation Support - If you have questions about test results or the T.O.V.A. report, we offer **free interpretation support**. Plus, if you use the interpretation support interface inside the T.O.V.A. application, you can send us the sessions you have questions about, with Protected Health Information removed automatically.

Customer Service - Have a question about sales, billing, or anything not technical? Contact customer service here!

And you can still always contact us by phone (**1.800.PAY.ATTN** or **562.594.7700**), email (**info@tovatest.com**), or fax (**800.452.6919** or **562.594.7770**) instead.
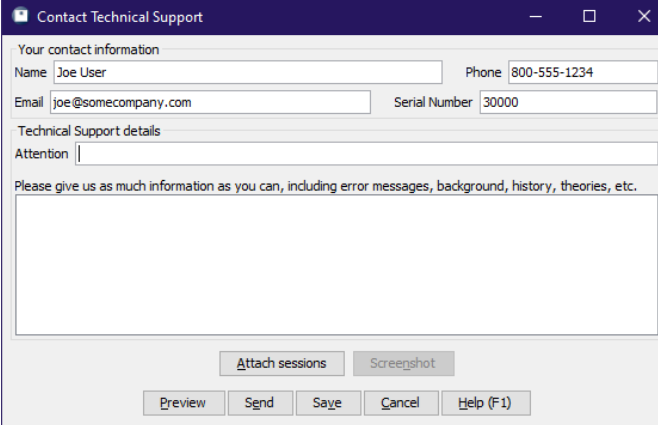
Figure 53: Contact Technical Support

In Figure 53, we see the **Contact Technical Support** window. We'll use it as our example.

26.1   Your contact information

This should be the best person for us to talk to or email about the issue. For a technical issue, it's best if this person has full administrator access to the computer. For an interpretation issue, this will be a clinician. Information entered into these fields will be remembered and filled in automatically, so make sure to review and correct an email address or phone number that may have changed. Add any additional names, numbers, or email addresses to the large Details field.

26.2   Details

In the large text field you can ask your questions or give us more information about technical issues. It's okay to just leave the **Attention** field blank, but if you've already talked to a specific technical support representative about this issue, please add their name here.

26.3   Technical support information

When you send a technical support request, we will collect information from your system that may help us resolve the issues. Specifically, we send these:

- The state of the attached T.O.V.A. 8.3 hardware

- The T.O.V.A. application log

- Logs from the Precision Test Environment (PTE) saved to the T.O.V.A. USB device or flash drive.

- The T.O.V.A. install and updater logs *(Windows only)*

- The T.O.V.A. PTE Activation service log *(Windows only)*

- System properties of your Java Runtime Environment (JRE) - JRE versions, memory, etc.

- Other system information about device drivers, your drives and partitions, processor, and other hardware.

All of this information is technical and can often help us answer your questions and resolve technical issues. There's a lot of information, and on some systems it may take a minute to collect and upload. Contact us if you'd like to more details about the information collected.

26.4   Attach sessions

If you have questions for technical or interpretation support about specific subjects or sessions, you can attach them here. When you click the **Attach sessions** button, you will be shown a list of subjects and sessions, along with a search bar, similar to the main window. Click to highlight the subject or session you want to attach (selecting a subject will attach all of their sessions). To select more than one, use **Ctrl**-click (Mac users, **Command**-click) to highlight each additional, or **Shift**-click to highlight a range.
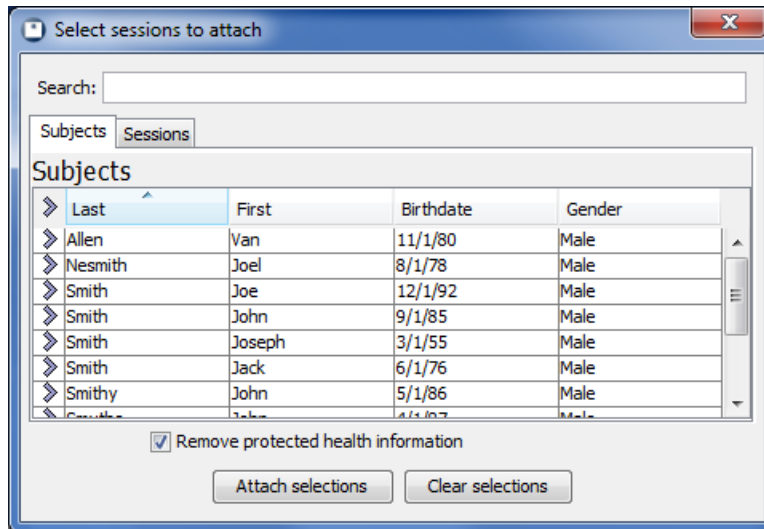
Figure 54: Send sessions with your support request

Notice the checkbox at the bottom of Figure 54, **Remove Protected Health Information**. This is selected by default and will strip out of subjects or sessions you attach any information that would personally identify the subject. In rare instances where a question is specific to that personal information, you may uncheck this box. For more information on protecting personal health information, see section 23 on page 60.

Click **Attach Selections** to include those selected subjects and sessions or **Clear Selections** if you decide not to attach any. When you're finished, the **Attach sessions** button will display a green check to indicate sessions are attached.

26.5 Screenshot

Sometimes something may be happening on the screen that's hard to describe to technical support. Click the **Screenshot** button, and a small window appears (see Figure 55).
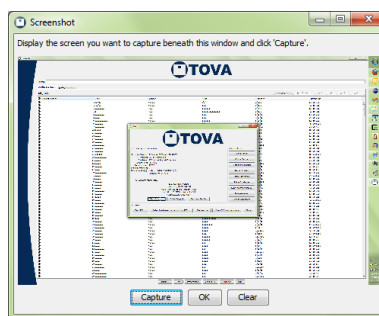
Figure 55: Use screenshot capture to show us your screen

When you click the **Capture** button, whatever's showing on the screen beneath will be attached as an image to your support request. A thumbnail of that image will then display in the Screenshot window. If it doesn't look right, arrange your windows and try another capture. If you can't tell, resize the window to make the captured image larger. When you're finished, click **OK** and the **Screenshot** button will now have a green check, indicating your request has the screenshot attached. You may instead click **Clear** if you decided not to attach any screenshot.

26.6   Preview

Preview lets you see all the information and files you'll be sending us when you click the **Send** button. It's not necessary, but it's there for the curious.

26.7   Send

When you choose **Send**, all of the information you've selected will be collected together, compressed, and uploaded through your internet connection to us. This can be a lot of information, so it may take a minute. When it's finished, you should see a message stating simply, "Your contact request succeeded."

If, however, your upload fails, you might try the next option.

26.8   Save

If your system is not connected to the internet, or if you have problems uploading your contact request, choose **Save** to collect and save all the information to a file. Then you can copy the file to another system and/or attach it to an email to **support@tovatest.com**.

26.9   Cancel, Help

You can guess what these buttons do.

27   Updating the T.O.V.A.

Since software updates to the T.O.V.A. are free, we've worked to make keeping your T.O.V.A. up to date as easy as possible. When a new version of the T.O.V.A. is available, the T.O.V.A. will download it automatically.

Note: The T.O.V.A. will never update without your consent; you will always be prompted before an update is installed. However, you can disable automatic download of updates in the Preferences (section 24.17 on page 73).

When there is a new update available, the **Status** button on the main window will turn yellow.

27.1   Updates
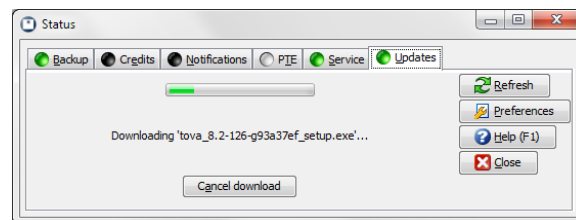
Figure 56: Downloading update

Click the **Status** button on the main window and then **Updates**, and you'll see the Updates pane. This pane will tell you if your T.O.V.A. is up to date, if there's a newer version available, and more. Some of these options may also appear:

- **Check for updates** - Checks for a new version of the T.O.V.A.

- **Download update** - Starts downloading the new T.O.V.A. version

- **Install software update** - Installs the updated T.O.V.A. version

- **Retry update** - If something went wrong with the last update, the T.O.V.A. will offer to reinstall. Reboot your computer and try the update again.

- **View release notes** - Displays the ReadMe file, included with your update, which tells you what fixes and improvements it includes

- **Cancel download** - Terminates the download of the latest version

- **Retry download** - Restarts downloading, if the previous attempt failed

- **Install update manually** - If download fails, this opens a link in your browser to download and install the latest T.O.V.A. version. For more information, see section 34.3 on page 120.

Once the T.O.V.A. finishes downloading the latest version, click **Install software update** button, and you'll be next prompted to review the release notes and accept the updated license agreement, if any.

Note: Please save or erase any session on the T.O.V.A. USB device before updating the T.O.V.A. software. Software updates often include a firmware update, and any session data on the device will be lost.

If you accept the agreement, the T.O.V.A. will exit and begin the update process. Once the update is complete, the T.O.V.A. will automatically start back up.

27.2   Firmware updates

Some software updates may come with updates to the device or microswitch firmware, the software on your T.O.V.A. hardware. Yeah, the hardware has software, too.
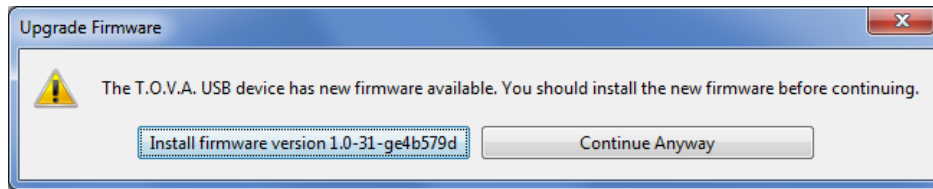
Figure 57: A new firmware update is available

When a firmware upgrade is available, the T.O.V.A. will prompt you to install it immediately (Figure 57). Though you can choose to **Continue Anyway**, the T.O.V.A. will prompt you pretty persistently. Firmware upgrades often involve fixes critical to testing, so we advise you to always install firmware upgrades. Click the **Install firmware** button, and the firmware update will begin. It shouldn't take more than two minutes. **Note:** Please don't disconnect the T.O.V.A. USB device or try to administer a test during a firmware update.

When the firmware update is finished, you're ready to administer more T.O.V.A. tests. If the firmware update fails, restart the T.O.V.A. application, reattach the T.O.V.A. USB device, and let it try again. The T.O.V.A. USB device must have valid firmware compatible with the software.

27.3   Updating your T.O.V.A. CD or flash drive

Usually an update to the T.O.V.A. means an update to the PTE, to increase compatibility with new hardware, add new features, and fix bugs. If you're using a T.O.V.A. CD to boot the PTE on your system, you need to update that CD to boot the latest version of the PTE. See section 32.3 on page 111 for details on where to download the latest CD image and steps to update the CD in your OS.

Likewise, if you're using the T.O.V.A. flash drive to boot the PTE instead, it also needs to be kept up to date (section 32.2 on page 110).

27.4   When update fails...

We try to anticipate every hardware and software configuration, but something may still happen that causes the automatic update to fail. If there were install errors or the install didn't complete, the Update tab of the Status window will display a red error status and will prompt you to **Retry update**. We recommend you reboot your computer before trying the update again.

You can also click **Manual Update** to try manually updating the T.O.V.A. For more information, see section 34.3 on page 120.

If you encounter further problems, please contact T.O.V.A. tech support for help (section 26 on page 78).

Reference

This is the reference section, where we answer all the questions we didn't answer in the rest of the manual. If you can't find your answer here, don't forget: you can always contact T.O.V.A. technical support (section 26 on page 78).

28   Hardware

This reference section deals with the T.O.V.A. 8.3 hardware, what it does, and how to diagnose hardware problems.

T.O.V.A. USB device   - See section 28.1 on page 85.

T.O.V.A. Microswitch - See section 28.2 on page 88.

Check T.O.V.A. Hardware window - See section 28.3 on page 90.

Display Calibration - See section 28.5 on page 94.

General audio - See section 28.6 on page 96.

PTE Audio - See section 28.7 on page 96.

EAV Audio - See section 28.8 on page 98.

28.1   The T.O.V.A. USB device

The T.O.V.A. USB device is a miniature computer that is essential for administering the T.O.V.A. test:

Figure 58: Front and back of the T.O.V.A. USB device

- It measures the response time of your display, calibrating it for the visual T.O.V.A. test.

- During testing, it registers microswitch button presses with ± 1 ms accuracy.

- It stores responses—your test data—until a test credit is spent to save the session to your database.

- It generates the External A/V test for the external monitor plugged into the device's VGA **video out** port and the external speakers plugged into **audio out**.

It's also important to know what the T.O.V.A. USB device *doesn't* do:

- It doesn't store your T.O.V.A. test data after it's saved to your T.O.V.A. database.

- It doesn't hold data from more than one T.O.V.A. test.

- It doesn't boot the Precision Test Environment (PTE). The PTE boots from your computer or your T.O.V.A. boot media (flash drive or CD).

- It doesn't adminster tests without test credits.

28.1.1   That Little Light

The light on the front of the T.O.V.A. USB device indicates to you and to us what the T.O.V.A. USB device is doing. It can also be a distraction to your subjects, which is why we recommend that you keep it out of sight during testing. The microswitch has a nice long cable for just this reason, and the reset light is recessed somewhat to make obscuring it that much easier.

Figure 59: Reset light/button

Here are the colors you might expect to see using the T.O.V.A.:

Color	Status	Description
Yellow	Powered	Device is finding power, but is not recognized by your OS.*
Green	Ready	Device is attached and recognized by your OS.
Blue	Testing	Device is running the T.O.V.A. test. **If the device is disconnected or loses power while the light is blue, your test data will be lost.**
Red	Error	An error prevents testing (e.g., microswitch unplugged). The red light may blink to indicate a specific error.
White	Switch down	The microswitch is being pressed (It doesn't turn white during testing, to avoid distraction).

* **Note:** A yellow light may indicate you haven't installed the T.O.V.A. USB device drivers. You should install the T.O.V.A. software *before* you setup the hardware. See section 8.12 on page 10 for information on installing the T.O.V.A.

28.1.2   Device not found

If the T.O.V.A. does not recognize that your T.O.V.A. USB device is attached, try the following:

1. *Before* you attach the hardware, make sure you install the T.O.V.A. software.

2. Make sure that the USB cable is firmly attached to the T.O.V.A. USB device and your computer's USB port.

3. Exit the T.O.V.A.

4. Disconnect and reconnect the device. When you reconnect, Windows may indicate this with a 'T.O.V.A. USB Device' balloon and/or a sound effect.

5. If your OS recognizes the device, the light should turn green. Run the T.O.V.A. and the device should be recognized.

Other tips:

- Make sure that you are plugging the device into your computer and not to a separate USB hub.

- Try unplugging other USB devices, especially any other testing hardware.

- If a USB port on the front of your computer doesn't work, try one on the back, or vice versa.

- If your OS still won't recognize the device being attached and the light remains yellow, disconnect your device and reinstall the T.O.V.A. software. You can download the latest software by entering your T.O.V.A. serial number (found on the bottom of your T.O.V.A. USB device) at `https://www.tovatest.com/downloads`.

28.1.3   Other device errors

Sometimes there can be communication problems with the T.O.V.A. USB device. There are two common causes of this:

Sleep mode - If your system goes to sleep while running the T.O.V.A., it can lose its connection to the device, interrupt the test, and even lose your T.O.V.A. test data. To clear up the problem, exit and restart the T.O.V.A. To avoid this problem in the future, we recommend that you disable sleep mode on your T.O.V.A. system. See section 34.1 on page 119 for steps specific to your operating system.

USB hub - If your T.O.V.A. USB device is plugged into a USB hub, you may get unpredicable communication problems. You should plug your T.O.V.A. USB device directly into a USB port on your system—**USB hubs are not supported with the T.O.V.A.** See section 12 on page 17 for more information.

If the above doesn't resolve the problem, try the "Device not found" steps above (section 28.1.2 on page 86). If it continues to happen, there may be a problem with your computer or your T.O.V.A. hardware–contact T.O.V.A. technical support for help (section 26 on page 78).

28.1.4   Resetting your audio and video

If ever your screen will not show the correct picture or your speakers are making a sound they shouldn't be, you can reset the T.O.V.A. USB device by pressing the button (that little light) on the front. That will return audio and video control to your system. If you're still having audio or video problems then, it's probably not the T.O.V.A. USB device causing them.

Note: You should also make sure that the USB cable is properly attached, as that power is needed to carry the audio and video signals.

28.2   The T.O.V.A. microswitch

Instead of mice or keyboards (both unpredictably inaccurate), the T.O.V.A. uses a standardized microswitch which performs reliably and consistently. The T.O.V.A. 8.3 microswitch has a built-in light sensor that we use to calibrate your display. For more information on calibration, see section 17.5.1 on page 36.

Figure 60: Connector

Figure 61: Microswitch Jack

To connect the new microswitch to the T.O.V.A. USB device, line up the arrows on the top of the connector with the top of the T.O.V.A. device and push it gently into the port. You do not need to twist or turn or squeeze in any way.

To disconnect the microswitch from the T.O.V.A. USB device, grasp the connector on either side and pull it gently but firmly out from the device. Again, you do not need to twist or turn or squeeze the connector in any way.

28.2.1   Why isn't my microswitch working?

The T.O.V.A. microswitch gets the most use (and abuse) of any part of the T.O.V.A. kit, and a test taken with a faulty microswitch can't be considered reliable.

- Make sure your T.O.V.A. software is up to date. Check the **Updates** pane of the Status window or enter your T.O.V.A. serial number at http://www.tovatest.com/downloads to download the latest software for your T.O.V.A. hardware.

- If the T.O.V.A. software tells you the microswitch is malfunctioning, please contact T.O.V.A. tech

support.

- If any part of the microswitch appears to be coming apart or shows exposed wires, contact T.O.V.A. customer service to replace it.

- If the light on the front of the T.O.V.A. USB device is red, make sure that the microswitch is plugged into the front of the T.O.V.A. USB device correctly. Disconnect and reconnect the microswitch using the instructions above.

- Make sure the microswitch 'feels' right. With a gentle press, it should make a sudden transition to the pressed state with a single click. If it feels mushy, or very hard to press, or something is rattling in the case, the microswitch should be replaced and not used for further testing.

- Go to **Help**, **Check T.O.V.A. hardware**, **Check microswitch** to test your microswitch button. If there is or was a microswitch error, it may be indicated on this window as well. See section 28.3 on page 90 for more information.

- If, after trying the above, the microswitch fails intermittently, it should be replaced. Do not continue testing with a faulty or failing microswitch.

If you need a new microswitch, contact T.O.V.A. customer service (section 26 on page 78) immediately, so we can replace it as soon as possible. **Note:** We might ask you to send us the old one for quality control purposes.

28.3   Check T.O.V.A. Hardware

The Check Hardware window has information and tools for testing and fixing the T.O.V.A. USB device, the microswitch, and your system's connections to them. Let's review them briefly:

28.3.1   Hardware information

On the right side of the Check T.O.V.A. hardware window you are given all the information about your T.O.V.A. hardware.

Serial number - Your serial number (usually a five-digit number) uniquely identifies your T.O.V.A. USB device and may be used to identify you when you contact The TOVA Company for service or support.

Report type - This identifies whether you have a Standard or Screening device. Contact T.O.V.A. tech support (section 26 on page 78) for more information.

Credits remaining - You must have at least one T.O.V.A. test credit available to administer a T.O.V.A. test—you will use a test credit to save the results of that test. See **Credits** (section 19 on page 48) for more information.

Device version(s) - Gives the firmware version of your attached T.O.V.A. USB device and microswitch. When you update the T.O.V.A. (section 27 on page 82), you will sometimes be prompted to update this firmware as well (section 27.2 on page 83).

Power source - Your T.O.V.A. USB device should always be able to run on power supplied by the attached USB cable.

Session status - Usually, this will say **NONE** to indicate that any session data has been saved or erased. If it says something else, there may be session data still stored on the T.O.V.A. USB device. Choose **Check for session** (detailed below) to save any session data you wish to preserve, as soon as possible.

Other error statuses - If there are problems with your T.O.V.A. USB device or microswitch, you may see other errors here as well. You should report hardware errors to T.O.V.A. technical support immediately to correct problems you may encounter.
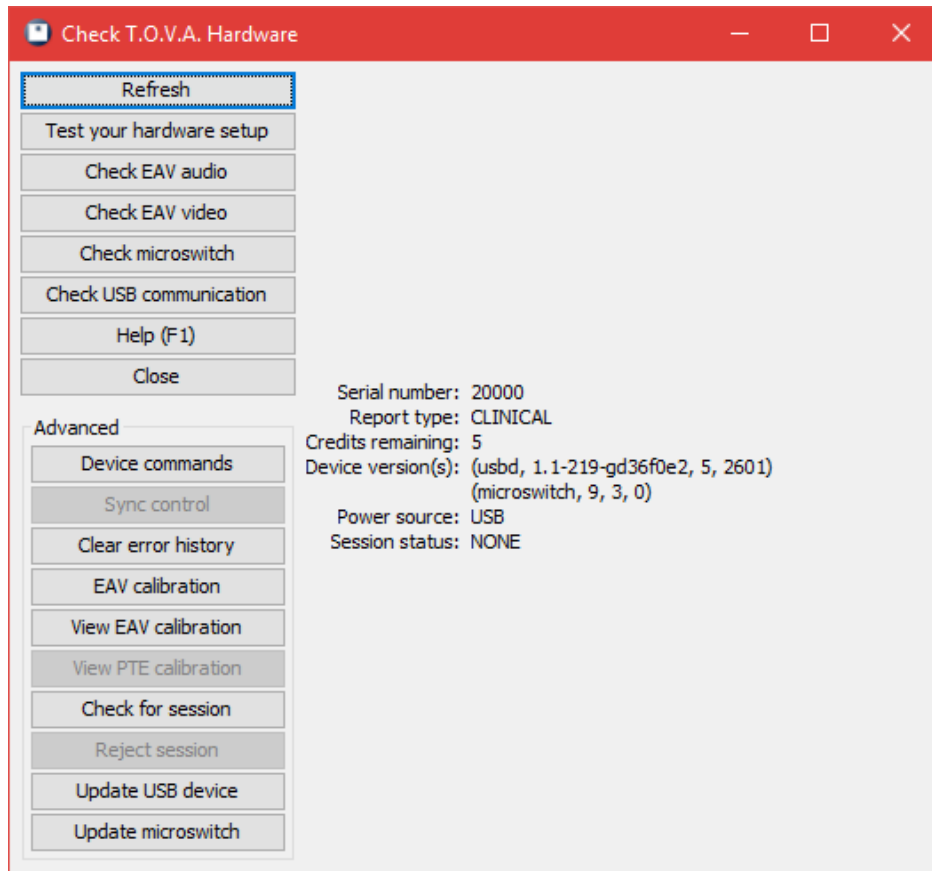
Figure 62: Check T.O.V.A. hardware window

28.3.2   Hardware tools

Refresh - If you connect a new T.O.V.A. USB device, choose **Refresh** to load its information

Test your hardware setup - Runs the Hardware setup wizard, which verifies your T.O.V.A. hardware connections step by step (see section 13 on page 22).

Check EAV audio - Lets you play audio from your sound card and from the T.O.V.A. USB device, and adjust the EAV volume to balance the two.
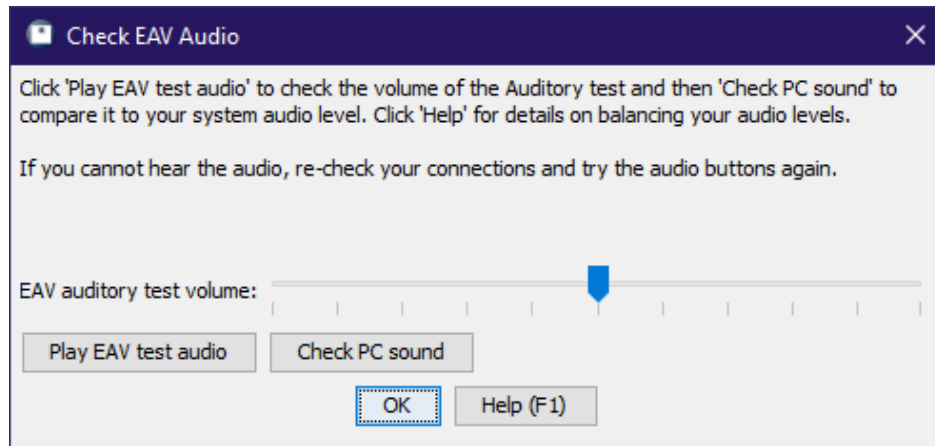
Figure 63: Check the audio volume for EAV testing

Check EAV video - Presents images from the T.O.V.A. USB device to your external display to verify that the video has been hooked up correctly

Check microswitch - This helps you verify that the microswitch is properly attached and recognizing button presses. See section 28.2.1 on page 88 for more information.

Check USB communication - This experimental feature tests communication with the T.O.V.A. USB device. **Note:** Any session data on your T.O.V.A. USB device will be overwritten–only use at the direction of technical support.

Help - Opens the 8.3 User's Manual to this section

28.3.3 Advanced hardware tools

Below these are more advanced functions. **Note:** You should not use these without direction from T.O.V.A. technical support.

Device commands - Useful only at the direction of T.O.V.A. Technical support

Sync control - Tests the synchronization interface (available only if the sync interface is attached to your T.O.V.A. USB device)

EAV calibration - Recalibrates your display for EAV testing

View EAV calibration - Presents the latest results of display calibration for the EAV, with a brief explanation of errors

View PTE calibration - Presents the latest results of display calibration for the PTE, with a brief explanation of errors

View clipboard calibration - Useful only at the direction of T.O.V.A. Technical support

Check for session - Manually checks if there is an unsaved test on the T.O.V.A. USB device and offers to save the data.

Reject session - Allows you to erase unsaved test data from the device. **Note:** Data is removed from the device when it is saved to the database. If you do erase data from the device instead of saving it, it will be lost forever.

Update firmware - Updating the firmware should happen automatically, if ever necessary, when you up-
date the T.O.V.A. (see **Updating the T.O.V.A.**, section 27 on page 82). This option is only useful
at the direction of T.O.V.A. Technical support.

Update microswitch - Updating the microswitch firmware should also happen automatically when you
update the T.O.V.A. (see **Updating the T.O.V.A.**, section 27 on page 82). This option is only
useful at the direction of T.O.V.A. Technical support.

28.4   Manual Sync Interface Control

Note: This is only available if you have a T.O.V.A. USB device with the sync interface attached.
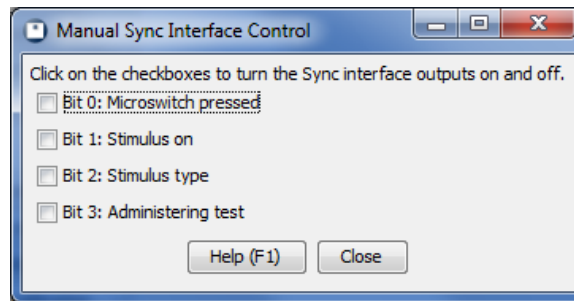
Figure 64: Test the T.O.V.A. USB device sync interface

This is meant to help you debug the outputs of the sync interface by giving you manual control of the output
bits. Note that the 'Vout' and analog vs. digital configuration settings cannot be changed here; you have
to go to **Preferences**, **Sync Interface** in order to change them. For more information, see the **T.O.V.A.
Synchronization Interface manual**.

28.5   Troubleshooting Display Calibration

You must calibrate your display to administer the visual T.O.V.A. test. Whether it's a modern LCD display or a big, old CRT monitor, every display has some delay, however brief. Calibration allows the T.O.V.A. to properly account for your display's specific timing, so that the results of the T.O.V.A. will be as precise and accurate as possible.
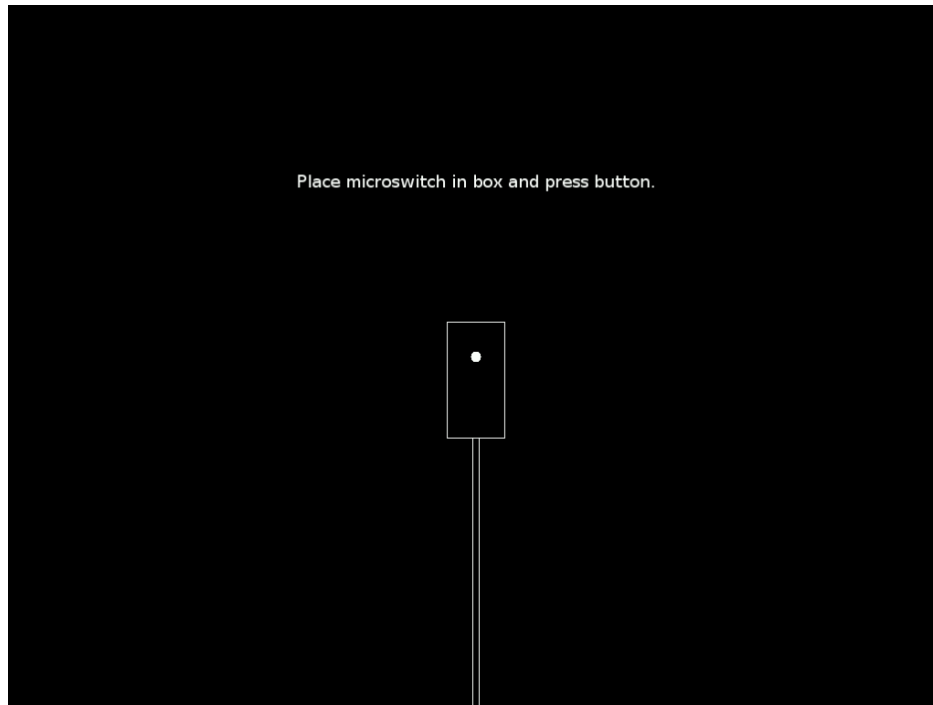
Figure 65: Hold the photodiode up to the rectangle on the screen

Most displays will calibrate successfully. However, others may encounter errors during calibration.

The first thing you should do if your calibration fails is try it again. Make sure that you're holding the microswitch so that the bottom of the microswitch (where the photodiode window is) is directly touching the surface of your screen, but not pressing down hard. The button should be facing outward from the screen and the cord should be hanging down from the back of the microswitch, as indicated on the calibration diagram (Figure 65). Calibration may take a minute or so, but try to hold the microswitch still.

Secondly, some displays may take a few minutes to finish warming up. Restart the calibration and leave the message "Place microswitch in box and press button" on the screen for at least two minutes before starting a second time.

Thirdly, your display may be too dim, and you should increase the brightness and try calibration again. Once calibration is complete, you can lower the brightness again as appropriate.

If you continue to get the same error, the problem can be diagnosed here:

Calibration was interrupted. - Your calibration was interrupted before it could be completed. You should try calibration again and let it complete.

The photodiode on the T.O.V.A. microswitch is not seeing the calibration flashes. - There are some common reasons for this:

Figure 66: How to hold your microswitch for calibration

- You may not be holding the T.O.V.A. microswitch correctly. Make sure the photodiode window on the back of the microswitch is inside the box on the calibration screen. Make sure the back of the microswitch is actually pressed up against the front of the display. See Figure 66 or go to http://videos.tovatest.com for an instructional video.

- Your display may still be warming up. Restart the calibration and leave your display showing the "Place microswitch in box and press button" screen for at least two minutes before starting the calibration routine.

- Your display may be too dim. Try increasing the brightness on your display. Note that if the screen appears too bright after this change, you can reduce the brightness again after calibrating.

- There may be too much light on the display. Direct sunlight shining on your display can sometimes flood the display. Make sure the front of your display does not have direct sunlight on it.

Calibration results had too much drift over time - Some displays introduce random delays in the display of the visual stimuli and thus are not accurate enough for use with the T.O.V.A. test.

The calibration results were too variable - This indicates that our T.O.V.A. hardware could not perceive a consistent video timing pattern.

The calibration routine cannot determine if this display can be used - Timing was not quite consistent enough to calibrate. This usually indicates your display just needs to warm up a bit more.

Once you get a successful calibration, you should be good to administer the test, and you won't need to recalibrate every time. If you replace your system's monitor or video card, however, you should always recalibrate the T.O.V.A. to the new display hardware.

If you continue to receive errors, your display may not be capable of accurately administering the T.O.V.A. test. The T.O.V.A. will not administer the visual T.O.V.A. test on a display unless it can be successfully calibrated. Please contact T.O.V.A. technical support (see section 26 on page 78), so we can get more information about your monitor and recommend other models that will work better.

28.6   General Audio Troubleshooting

Audio is an important part of the T.O.V.A. The T.O.V.A. test instructions are spoken by your computer. The auditory test complements the visual test by measuring attention differently. As a result, we want the T.O.V.A. to work with your system's audio hardware. Are your test instructions too loud and your auditory test too quiet, or vice versa? If you're having sound problems with the T.O.V.A., we can help you fix that.

The PTE and EAV tests each have their own volume settings. The sections to follow can help you address volume problems in each testing environment, but first a couple of general audio tips.

28.6.1   Your Speakers

The easiest way to control volume is by raising or lowering the volume on your external speakers. However, if you have no external speakers–a laptop with a basic PTE hardware setup (section 12.1 on page 18), for instance—you can skip to the next section.

If you can't hear the auditory test or the test instructions, check your speakers first: Are they plugged in, turned on, and turned all the way up?

28.6.2   Instructions audio

The test instructions are accompanied by audio by default. Press the **space bar** to pause or restart the instruction audio and the **S** key to turn the audio on (or off) while the instructions are playing. **Note:** With the instruction audio off, the instructions must be advanced manually, using the right arrow key.

28.7   Troubleshooting PTE Audio

For audio problems in the PTE, use the PTE volume controls. From the main PTE menu, press ↑ to raise the volume one step and ↓ to lower it. Each time a brief audio clip will be played, and a number will be displayed. The volume level you choose will be stored when you return to your OS and preserved for your next PTE session.

Note: These volume controls are only available from the main PTE screen and not during the T.O.V.A. test or the Test Instructions.

A Note on the Auditory Test: If the target (higher) tone is significantly louder than the nontarget (lower) tone, the problem is the bass response of your speakers. This can often be an issue with laptops, and you will need to use different speakers to resolve this. Contact T.O.V.A. customer service for recommendations.

28.7.1   PTE Audio Device menu

If your sound works fine in your OS but does not work in the PTE, the PTE may not be selecting the correct audio hardware. You may see an audio error or the speaker button at the bottom of the main PTE menu will be disabled.

First, click the **wrench button** (or press **Alt + A**). The next steps vary between the modern and legacy PTE:

In the modern PTE (1.1):

1. Choose the **Audio** tab.

2. From the **Audio device** drop-down, select another device.

3. Click **Play sound** to play a brief audio clip through the speakers.

4. Click **Close** to return to the main PTE menu.

In the legacy PTE (9.1):

1. Choose [**C**]**hange audio device** to present a menu of all of the audio devices the PTE can detect.

2. Select a device, even if there is only one listed, and an audio clip should play at the current volume to test out the device.
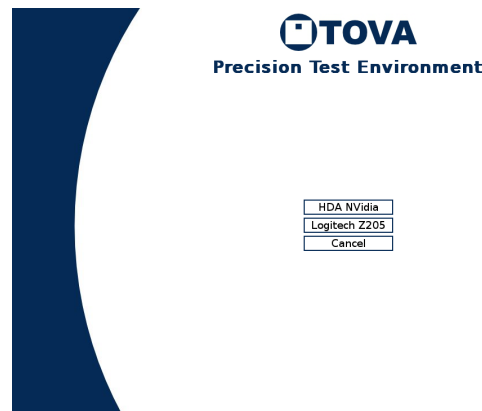
Figure 67: [**C**]**hange audio device** brings up the audio device selection menu

If the audio played correctly, great! Resume your PTE test session or click **Done** to return to your OS. Your device selection will be preserved.

If you get an error after choosing the audio device, go back to **Change audio device** again and select a different audio device, if any. If you try all the devices here and no audio plays, your audio hardware may be incompatible with the PTE. If this is your situation, please contact T.O.V.A. tech support. We are doing our best to make the T.O.V.A. PTE work for every sound card.

28.7.2   Adjust Audio Levels

Note: *Please use this screen carefully, preferably on the advice of T.O.V.A. technical support. The main PTE volume and mixer defaults will work best for most systems, so if it ain't broke, don't fix it.*

While the T.O.V.A. PTE has gotten increasingly proficient at recognizing hardware and adjusting settings to the right default levels, some computers may still need additional tweaks. If your audio is too quiet, too loud, or distorted somehow, and the main PTE volume can't correct the problem, the latest PTE version has an audio mixer that might help you.

Click the **wrench button** at the bottom of the main PTE menu (or press **Alt + A**). Click the **Audio** tab (or choose [**A**]**djust audio levels** in the legacy PTE). Here you will be able to see and adjust all the channels for your computer's audio device. The bar indicates the volume level, and the box next to it whether the channel is turned on or off.
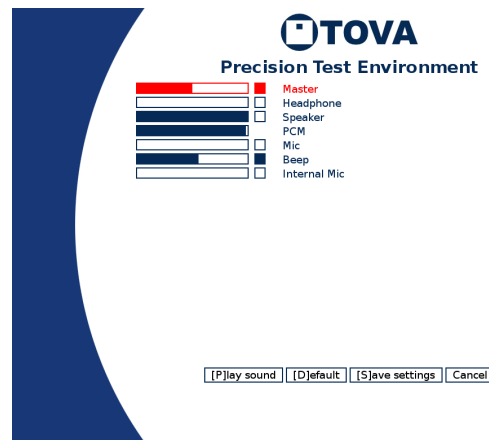
Figure 68: Only the Master and Beep channels are turned on here

Please note that this screen is not about selecting a specific channel to be used by the T.O.V.A., but rather the audio levels contributing to the sound in the T.O.V.A. Some may be best turned off, and some may have no effect whatsoever. We are happy to help you find the settings that will work best for your system.

- Every sound device will have its own set of channels. Yours may have more, fewer, or different channels than you see in Figure 68.

- You can adjust channels by clicking the volume bar where you want the level to be, or clicking the square to toggle the channel on or off.

- You can also adjust channels with your keyboard. The channel selected to adjust will be red. Click the up/down arrow keys to select a different channel to adjust, left/right arrow keys to raise or lower the volume for that channel, and the space bar to toggle the channel on or off completely.

- Click [P]lay sound to hear the sound at your adjusted levels.

- Click [D]efault to revert to our default audio levels for your system.

- Once you're finished, click [S]ave to preserve your changes, and when you boot back to your OS, your changes will be remembered for future PTE sessions.

- Click Cancel to abandon any changes you just made.

- If you call tech support, we will help you find the right adjustments for your system and environment.

28.8   Troubleshooting EAV Audio

Let's talk about how to resolve audio problems with the External A/V (EAV) test.

28.8.1   EAV hardware setup

Make sure you have your T.O.V.A. hardware set up correctly for EAV testing.

- See section 12.2 on page 19 for step-by-step instructions.

- Go to https://www.tovatest.com/eav to learn more about the EAV hardware setup.

- See the T.O.V.A. Installation Guide for a diagram of the EAV hardware setup.

- See https://videos.tovatest.com/ for a short video that walks you through the EAV connections.

28.8.2   EAV volume controls

T.O.V.A. test instruction audio comes from your computer. However, during an EAV auditory test, the T.O.V.A. USB device will play the tones. So you have multiple audio sources and multiple volume controls: your OS's volume (which may have more than one control), the T.O.V.A. USB device's volume, and your speakers' volume.

Here are steps you can follow that will solve most EAV audio problems:

1. Run the T.O.V.A.

2. Go to **Help**, **Check T.O.V.A. hardware**, and then **Check EAV Audio**.

3. Click **Play EAV test audio** and note the volume of the audio that plays.

4. Click **Check PC sound** and note the volume of the audio that plays.

5. If both are too loud or too quiet, adjust your speakers and go back to Step 3.

6. If you cannot hear the EAV audio, try swapping the audio cable plugs: you may have **audio out** and **audio in** reversed. Then go back to Step 3.

7. If the computer sound is too loud or too quiet, adjust the volume for your OS. You may have buttons on your keyboard for this purpose, or a small icon you click on to bring up your volume control. Adjust the volume there and go back to Step 3.

8. If the EAV audio is too loud or too quiet, choose a different value for the "EAV auditory test volume" and click **Play EAV test audio** to test the new volume.

9. If you can hear the high tone of the auditory test well but not the low tone, the problem is probably the bass response of your speakers. You may need to use different speakers. Contact T.O.V.A. customer service for recommendations.

28.8.3   EAV audio errors

If you see an audio error when launching an External A/V (EAV) session, please try these steps:

1. **Check your T.O.V.A. hardware setup** (section 12.2 on page 19). The standard EAV hardware setup on a desktop involves an audio cable running from your computer's speaker or headphone jack to the **audio in** jack on the back of the T.O.V.A. USB device. If that cable is missing, it may trigger an error.

2. **Test your computer's audio outside the T.O.V.A.** Try playing music, video, or a game on your computer. If sound doesn't work in other applications, it won't work in the T.O.V.A. either. Contact your computer's support for general audio problems.

3. If audio works in other applications on the computer, and your T.O.V.A. hardware is installed correctly, **please contact T.O.V.A. tech support** (section 26 on page 78).

4. An audio error will not affect an EAV test, only the test instructions. **Read the instructions aloud** to the subject, and use the left and right arrow keys to change slides.

28.8.4   Speaker noise

We have noticed that sometimes you can hear noise with the EAV setup that you don't hear if the speakers are plugged directly into your computer. We've found this is specifically the case with some laptops—that's because the laptop is actually producing the noise.

While the T.O.V.A. USB device may not be producing this noise, it might be amplifying it. Fortunately, the static or whine should go away during Auditory testing, when the computer's sound is cut off. If you find that it does not, try different speakers or contact T.O.V.A. tech support.

29   EAV vs. PTE: The T.O.V.A. Session Types

In the T.O.V.A. 8.3, there are two ways of administering a T.O.V.A. test session: PTE and EAV.
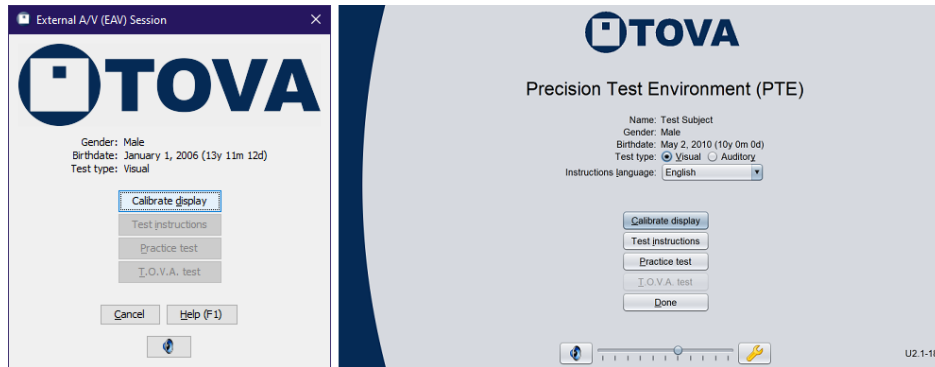
Figure 69: EAV and modern PTE

Both session types administer the same T.O.V.A. test, giving you the same precise, accurate test results. Both provide multimedia test instructions to prepare your subject for the T.O.V.A. test. Both require you to calibrate your display once before you can administer your first test. The only question is which session type works best for you and your computer:

PTE Setup	External Audio/Video (EAV) Setup
• For laptops without an external monitor or speakers	• Best for desktop PCs or laptops connected to an external monitor and speakers
• The simplest hardware setup	• Requires an external VGA monitor, among other additional connections
• Requires that you reboot your system to the PTE (Precision Test Environment) to run a T.O.V.A. session	• Allows you to test in your OS (Windows, macOS) without rebooting
• Compatible with most modern Windows or Mac computers, but not all	• Works on every modern Windows or Mac computer

- For more information on EAV testing, see section 30 on page 102.

- For more information on PTE testing, see section 31 on page 103.

- For more information on changing session launch options, see section 24.13 on page 69.

30   External Audio/Video (EAV) Setup
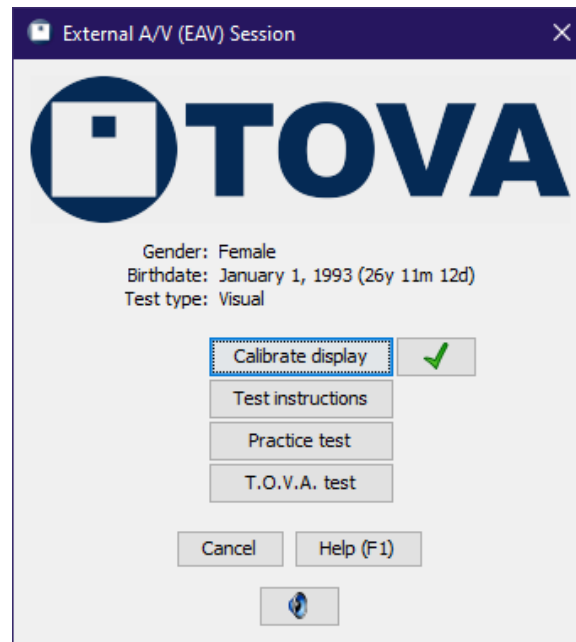
Figure 70: External A/V session

The **External Audio/Video session** does **NOT** require rebooting your system. That's because instead of relying on your system clock, video, etc., the T.O.V.A. hardware handles the timing itself. We manage the test video (or audio) and microswitch, removed from your operating system's unpredictable delays, so you get the same reliable timing precision and accuracy we have been providing for decades.

What an External A/V session **DOES** require is an external VGA monitor (and speakers for the auditory test). There must be an external display plugged into the T.O.V.A. USB device for T.O.V.A. testing without rebooting to the PTE. See section 12.2 on page 19 for detailed instructions.

The T.O.V.A. USB device is installed between your computer and your monitor and speakers. Video and audio simply pass through the T.O.V.A. USB device. When you start the T.O.V.A. test, however, the T.O.V.A. USB device temporarily interrupts your audio and video, instead displaying the T.O.V.A. test. Once the test is completed (or interrupted), your audio and video pass through as normal.

Note: Please make sure to disable, at least temporarily, any Sleep/Standby/Hibernate power settings for your system. Because External A/V testing does not use the keyboard or mouse, some systems will shutdown due to inactivity. See section 34.1 on page 119 for more information.

If you have set up your hardware for EAV testing, you can check that it's working and connected correctly. Run the T.O.V.A. and go to **Help**, **Check T.O.V.A. Hardware**, **Test your hardware setup**. This wizard will walk you through verifying all of your connections.

Note: If the first page of the Hardware Setup wizard talks about the "PTE" instead of the "EAV", you need to change your launch settings. In the T.O.V.A. **Preferences**, go to **Session launch**, select **External Audio/Video (EAV)**, click **Save**, and then try the Hardware Setup wizard again.

31   The Precision Test Environment (PTE)

The T.O.V.A. Precision Test Environment (PTE) was developed and refined over the years to allow accurate, precise T.O.V.A. test timing without additional hardware or connections. The PTE is an operating system like Windows or macOS, but since it's dedicated entirely to T.O.V.A. testing, it doesn't have the inconsistent timing of modern operating systems. Administering a T.O.V.A. test session in the PTE requires rebooting your computer.

- Booting the PTE, see section 31.1 on page 103.

- Using the PTE, see section 31.2 on page 106.

- Updating the T.O.V.A. flash drive, see section 32 on page 110.

- Updating the T.O.V.A. CD, see section 32 on page 110.

- **Note:** If you are using a desktop computer, with an external monitor and speakers, the T.O.V.A. 8.3 can administer tests without rebooting. See section 30 on page 102 for details.

31.1   Booting the PTE

As computers have evolved over the years, we've worked hard to adapt the PTE to new hardware and security restrictions. Most computers will be able to boot the PTE automatically, but some will require special support. When you install the T.O.V.A. on a new computer, we recommend you test out the PTE—before you bring in patients—and contact us if you encounter problems. **Note:** This will not use any of your test credits.

31.1.1   Reset your PTE preferences

To start off, make sure the default preferences are selected. These will have the best chance of working.

1. Run the T.O.V.A. application.

2. In the main window, click **Preferences**.

3. Under **Session launch**, choose the following options:

    - Precision Test Environment (PTE)
    - Automatic (on Windows) or EFI System Partition (on Mac).
    - immediately

4. Click **Save**.

Next, test booting the PTE.

31.1.2   Booting the PTE on Windows
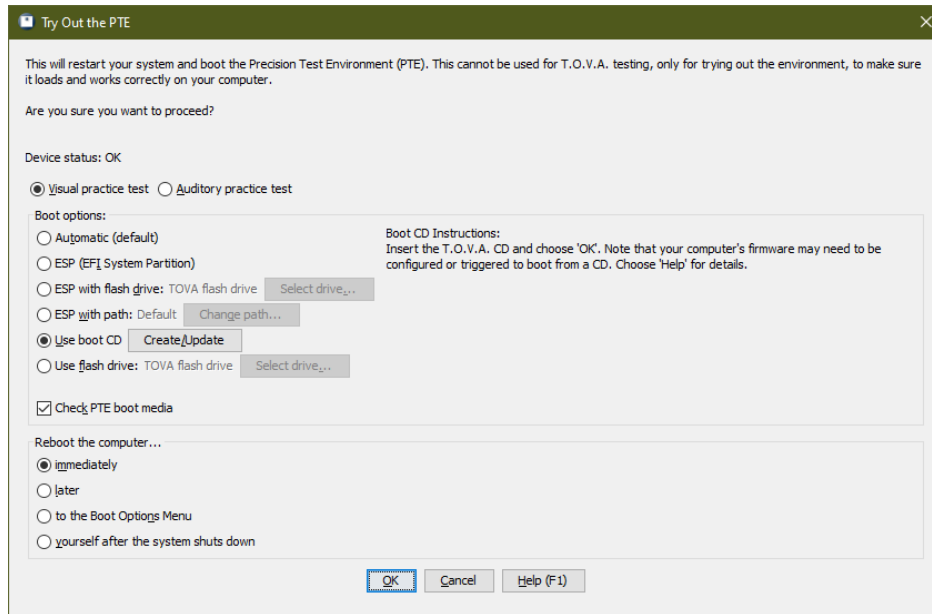
Figure 71: Try out the PTE...

Now that we've set our preferences, try booting the PTE. (**Note:** This will not use any T.O.V.A. test credits.)

1. Attach your T.O.V.A. USB device.

2. In the main T.O.V.A. window, click **Help**.

3. In the help window, click **Try out the PTE...**.

4. Click **OK** to reboot your computer.

5. If prompted, attach your T.O.V.A. flash drive (a thumb drive with a T.O.V.A. logo) and click **OK**.

Your computer should reboot to the Precision Test Environment (Figure 72, with a button to **Calibrate display**. Next, please try out the PTE itself (section 31.1.4 on page 105).

If you encounter problems booting the PTE or in the PTE itself, call T.O.V.A. tech support immediately or see section 31.2.3 on page 109 for some helpful support options. If rebooting your computer brings you right back to the T.O.V.A. application or errors prevent you from from rebooting, you can save time by sending a tech support request (section 26 on page 78) before you call.

31.1.3   Booting the PTE on a Mac

Important Note

The 2018 generation of Macs and beyond are starting to incorporate a T2 security chip that blocks the T.O.V.A. PTE from running. These models and beyond are affected:

- MacBookPro15,1

- MacBookAir8,1

- iMacPro1,1

- MacMini8,1

If you encounter this problem, please contact T.O.V.A. tech support (section 26 on page 78) for options.

Mac computers should be able to boot the T.O.V.A. PTE easily:

1. Attach your T.O.V.A. USB device.

2. In the main T.O.V.A. window, click **Help**.

3. In the help window, click **Try out the PTE...**.

4. Click **OK** to reboot your computer.

5. Hold the **Option** key while restarting until a menu of boot devices appears.

6. Click the **T.O.V.A. PTE** hard disk icon to start the PTE.

7. If you don't see **T.O.V.A. PTE** in the list, use your T.O.V.A. boot media.

   - If your Mac has a CD drive, insert your T.O.V.A. CD.
   - If your Mac does not have a CD drive, insert your T.O.V.A. flash drive.
   - Click **T.O.V.A. PTE** or **Windows** to start the PTE.

If the above steps don't work for you or you would like help with them, please contact T.O.V.A. tech support (section 26 on page 78).

31.1.4   Things to check in the PTE

We highly recommend you try out the PTE *before* your subject is sitting next you, waiting. When trying out the PTE, please do the following:

- Calibrate your display successfully (section 28.5 on page 94).

- Adjust the volume to an appropriate level for the instructions and the auditory test tones.

- Run the two-minute Practice test and make sure it appears correctly.

• Click **Done** to return to Windows/macOS.

If all of this works correctly, you should be ready for PTE T.O.V.A. testing.

31.2   Using the PTE

Using the Precision Test Environment (PTE) is simple and straightforward. There are two versions of the PTE for the T.O.V.A., "modern" and "legacy", but the two are largely the same. The T.O.V.A. will boot the PTE version that is compatible with your computer, so don't worry about choosing the right one.

The main PTE interface mimics the External A/V session interface. At the top you will see the main subject/session information. You should be sure that this information is correct, or you may be administering the wrong test!
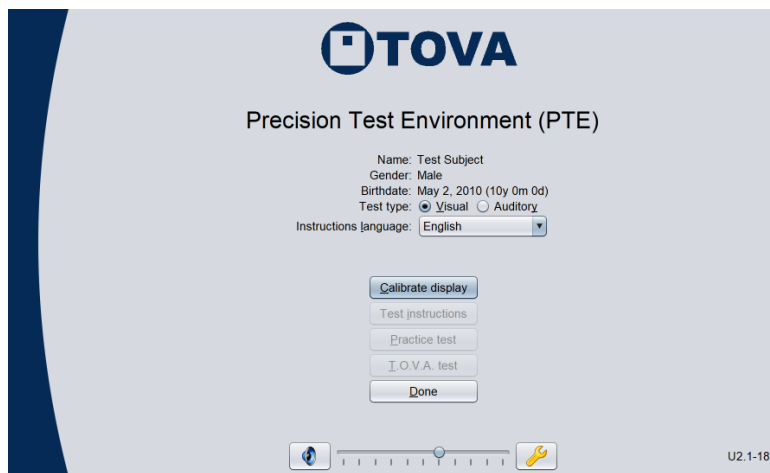
Figure 72: The Precision Test Environment

In the modern PTE you can change to a different Test type (Visual or Auditory) or Test Instructions language (**Alt+L**). **Note:** Even though you can change the test type, you should still only run one test per PTE session. Running a second test in the same session will overwrite the results for the first test. In other words, you should run your Visual test and then click 'Done' to return to your OS and save your test data before trying to run an Auditory test.

Below that information is a column of five buttons, one for each of the five steps of administering a T.O.V.A. test. As you complete each step successfully, a green check will appear beside the button. If instead a yellow warning sign appears, that step did not finish successfully, and you may want to repeat it.
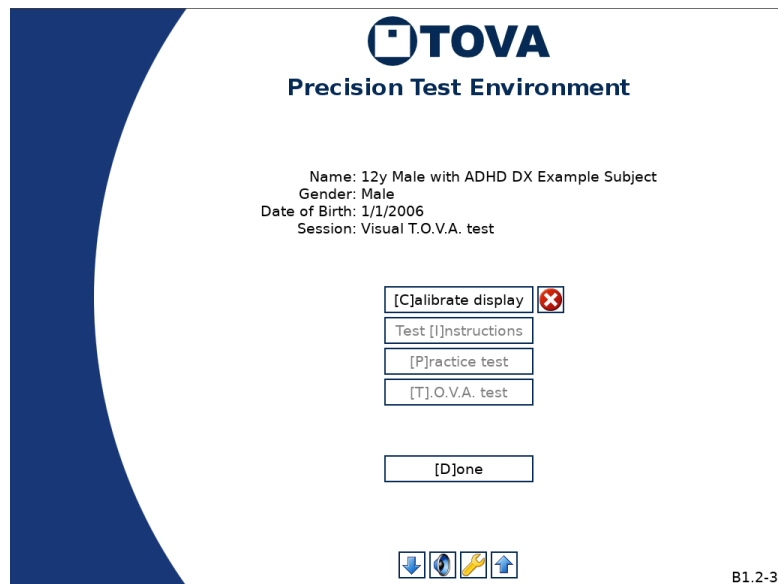
Figure 73: Legacy PTE after a failed calibration

Calibrate Display - **Note:** *This button only appears for visual testing. The auditory test does not require calibration.*

Your first step in the PTE is to calibrate your display, and you must calibrate successfully before you can administer a PTE test. Thereafter, the T.O.V.A. will remember this information, so the next time you test you won't have to recalibrate. When you update your T.O.V.A. software, you'll have to recalibrate, and if you install a new monitor or video card, you should recalibrate then, too.

Once calibration has completed successfully, a green check will appear next to the button. This indicates that the PTE has valid calibration data. If you see a red error circle instead, calibration has failed, and you will need to try again (Figure 73). See section 28.5 on page 94 for assistance.

Test Instructions - This will play the test instructions for your subject. See section 33 on page 113 for more information.

Practice Test - Presents the practice test for the subject. When the subject finishes the practice test, the results of the test will be displayed. If the results look unusual, you may want to go back and review the Test Instructions again, to make sure the subject understood them. You can re-display these results by clicking the small button next to the **Practice Test** button.

T.O.V.A. Test - Administers the T.O.V.A. test to the subject. When the subject finishes the test, a summary of the results will be displayed; this is a good time to be sure that all the stimuli were administered, and there were an appropriate number of button presses. You can re-display this summary by clicking the small button next to the **T.O.V.A. Test** button.

Done - Once you have successfully administered the T.O.V.A. test, you should see four green checks (or three for an auditory test). Clicking **Done** will return you to your OS, where you can save the test results to the database. (The T.O.V.A. should automatically start up after returning from the PTE.)

Volume controls - At the bottom of the PTE menu are volume controls. You can raise or lower the volume with **Alt** + ↑ or **Alt** + ↓. The speaker button toggles the test instruction audio. **Note:** If you turn off the test instruction audio, you will have to manually step through the instructions using the right arrow key (→) on your keyboard.

In the legacy PTE, there is an up arrow (↑) button that raises the volume one step and the down arrow (↓) lowers it. In the modern PTE, there is a volume slider instead. Each time the volume is adjusted a brief audio clip will play.

Advanced - If you have problems with the T.O.V.A. PTE, tech support may ask you to access the Advanced
PTE menu. Click the **wrench button** at the bottom of the main PTE menu (or press **Alt/Option**
+ A).

31.2.1   Current Advanced Options window
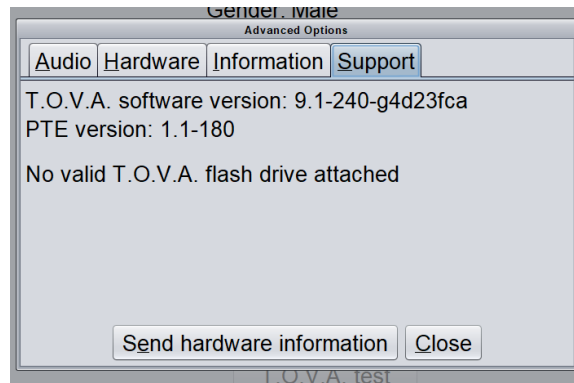
Figure 74: Support tab

The Advanced window in the modern PTE has multiple tabs:

Audio - Here you can adjust the PTE's audio settings. If the PTE's sound isn't working, try selecting a
different audio device. (On some systems, the PTE may find more than one audio device available,
even if you have no special devices plugged in.) You can also try adjusting individual audio channels.
See section 28.7.2 on page 97 for more information.

Hardware - Hardware testing options; use only if directed by T.O.V.A. tech support

Information - Only relevant to T.O.V.A. tech support

Stimuli - Display and adjust the visual test stimuli size and brightness, or play the auditory test tones.

Support - If you encounter problems in the PTE, this tab (Figure 74) has several relevant features:

- PTE version and the T.O.V.A. software version that launched it - This information may be
requested by T.O.V.A. tech support.
- Flash drive logging indicator - If attached, the PTE will automatically write diagnostic logs to
your attached T.O.V.A. flash drive. If you have your T.O.V.A. flash drive attached (a thumb
drive with a T.O.V.A. logo), but this tab indicates that it's not logging to it, detach and reattach
it.
- Send hardware information - If you don't have a T.O.V.A. flash drive, clicking **Send hardware**
information will write logs to your attached T.O.V.A. device instead.
  Note: This will overwrite any session data on the T.O.V.A. device, so don't choose this option
  if you were able to test successfully.

31.2.2   Legacy Advanced menu

There are several Advanced options available in the legacy PTE:

[C]hange audio device - On some systems, the PTE may find more than one audio device available, even if you have no special devices plugged in. Click the right one, or try them all. Hit the **1** key for the first device, **2** for the second, etc. See section 28.7.1 on page 96 for more information.

[A]djust audio levels - The main PTE menu lets you adjust the volume up or down. If the volume is still wrong or the sound is distorted, you may need to make special adjustments here. See section 28.7.2 on page 97 for more information.

Adjust [S]timuli - Use the keys below to change the shape and brightness of the visual test stimuli. Stimuli should appear as three-inch squares (measured diagonally). You can also display the stimuli here to help prepare your subject for testing.

- ↑ ↓ : Adjust stimuli height
- ← → : Adjust stimuli width
- **+ -** : Adjust stimuli brightness
- **+ Control** : Fine adjustment (e.g., **Ctrl** + ↑ makes the stimuli a small amount taller.)
- **T N F** : Display Target, Nontarget, or Focus Stimulus
- **Enter** : Save changes
- **Esc** : Discard changes

Send [H]ardware information - If you encounter problems, this will tell us all about how the PTE sees your system's hardware.

Send [D]evice communication log - This log can give us information about PTE problems that Hardware Information does not.

31.2.3   Problems in the PTE

Maybe the PTE is displaying a strange error. Maybe you're stuck at a black screen with a bunch of techno-jargon. Maybe the sound doesn't work, even after you turn it up.

Whatever is going wrong, here are the best steps to take first:

1. If you can, call T.O.V.A. tech support immediately, preferably while any error still appears on the screen.

2. It also helps to email a photo of any error screen to **support@tovatest.com**. If it's a black screen full of techno-jargon, make sure the last five or ten lines at the bottom are readable. Please include your **T.O.V.A. serial number**, which you can find on a sticker on the bottom of your T.O.V.A. USB device.

3. If you cannot call immediately, please plug your T.O.V.A. flash drive (a thumb drive with a T.O.V.A. logo) into your computer. This drive can collect logs on the problem you encounter, helping us to understand it better. (If you don't have an empty USB port, you can unplug your T.O.V.A. USB device and plug the flash drive into that one, but this can **ERASE** any unsaved test data!)

31.2.4   What if I can't boot the PTE automatically?

If you launch the PTE from Windows using the **Automatic (default)** boot option, the T.O.V.A. service will boot the PTE the best way it can find. If the service cannot find a way to boot the PTE automatically, though, don't give up hope. Please click **Send to tech support**, so that we can assist you.

32 The T.O.V.A. Flash Drive and CD

The T.O.V.A. 8.3 kit comes with a brushed metal T.O.V.A. flash drive, though your T.O.V.A. kit may have come with the older white flash drive. This flash drive contains installers for the T.O.V.A. 8.3 software that came with your T.O.V.A. kit, as well as documentation such as the Installation Guide and User's manual. The flash drive can also be used on some computers to boot the Precision Test Environment (PTE). If you do not have a T.O.V.A. flash drive and need one, please contact T.O.V.A. customer service.

The T.O.V.A. CD came with older versions of the T.O.V.A. kit, serving the same function as the T.O.V.A. flash drive. It can be updated to act as a boot CD for the legacy PTE, but this is only useful on computers old enough to still a) have a CD drive and b) support the legacy PTE. If you need to boot the PTE from a T.O.V.A. CD but don't have one, you can create one from a blank CD-R instead (section 32.3 on page 111).

32.1 Using the T.O.V.A. flash drive or CD

Most computers should be able to boot the T.O.V.A. PTE automatically and won't need a T.O.V.A. flash drive or CD. However, many systems will need to use the T.O.V.A. flash drive included in your kit, and will likely require some additional steps or configuration as well. If the T.O.V.A. doesn't boot the PTE automatically, please contact T.O.V.A. tech support, and we'll help you find the best approach for your system. You may also reach out to your organization's IT department or ask your system's manufacturer how to boot to a flash drive.

Your T.O.V.A. flash drive or CD also contains software installers and documentation, but we recommend you download the latest software for your T.O.V.A. hardware from our website instead: Go to `https://www.tovatest.com/downloads` and enter your T.O.V.A. serial number (found on a sticker on the bottom of your T.O.V.A. USB device or in the Help window of the T.O.V.A. application).

32.2 Updating (or Creating) a T.O.V.A. 8.3 Flash Drive

It is critical that the T.O.V.A. PTE remain up to date, with a version of the PTE that is compatible with your computer and the T.O.V.A. software. If you are using the T.O.V.A. flash drive to boot the PTE, and the T.O.V.A. application warns you that your PTE is out-of-date, you will need to update the flash drive.

Note: If you use a T.O.V.A. CD to boot the PTE, please see section 32.3 on page 111 instead.

32.2.1 On Windows

If you have a white T.O.V.A. flash drive, which comes up as `tova8` or `TOVA9`, you will probably need to contact T.O.V.A. technical support to update or replace it. **Note:** It's not as simple as just reformatting the drive.

If the drive has a brushed metal finish or shows a drive label of `TOVATEST`, it's probably a newer T.O.V.A. flash drive, and the T.O.V.A. software should automatically update the flash drive for you. Make sure it's plugged in when you launch a PTE session.

32.2.2   On Mac

Note: If you have personal files on the T.O.V.A. flash drive, **PLEASE** copy them elsewhere before updating the drive.

If you are using a Mac, the T.O.V.A. software installs scripts for creating or updating T.O.V.A. flash drives to boot the current PTE versions.

1. Plug in the T.O.V.A. flash drive. (For safety, this script will only work for USB Flash drives or SD cards labeled **tova8**, **TOVA9**, or **TOVATEST**. You can use any 500 MB or larger flash drive, but you will need to first change the drive label.)

2. Go to `/Applications/TOVA/utilities` or use **Spotlight** to find the `Update_Flash_Drive.command` script, and open it.

3. A Terminal window will open and build the T.O.V.A. flash drive. This will take several minutes.

4. If there is an error message, you should copy it and send it to us in a Tech Support Request. Otherwise, you can close the Terminal when the script says, "Finished!".

When it has finished, you can use the T.O.V.A. flash drive to boot the current PTE. Please contact T.O.V.A. tech support (section 26 on page 78) if you would like help or encounter problems.

32.3   Updating (or Creating) a T.O.V.A. CD
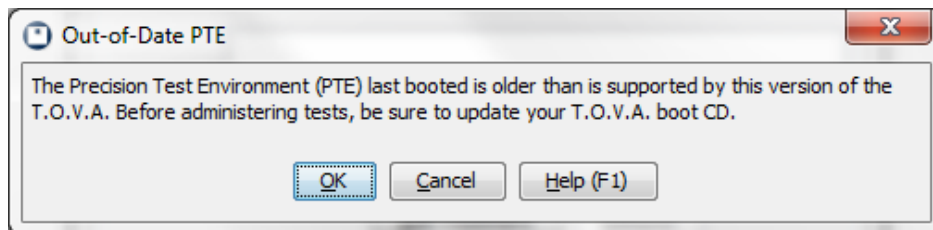
Figure 75: Keep your T.O.V.A. CD up to date

If you are using a T.O.V.A. CD, you may need to update it when you update the T.O.V.A. software, so that you're using the current version of the legacy PTE. The T.O.V.A. CD itself was a CD-RW and can be updated by most CD-RW drives and CD creation software. If you do not have the T.O.V.A. CD, you can write the T.O.V.A. CD image to any blank CD-R ("burning" just means writing data to a CD).

32.3.1   'Update_CD' script for Macs

The T.O.V.A. 8.3 has a script for burning the current CD image:

1. Insert the T.O.V.A. CD or another writeable CD.

2. Go to `/Applications/TOVA/utilities` or use **Spotlight** to find the **Update_CD.command** script, and open it.

3. A Terminal window will open, which will burn the current T.O.V.A. CD image onto the CD you put in the drive. This will take a few minutes, and the disk will eject when the process is complete.

4. If there is an error message, please copy it and send it to us in a Tech support request (section 26 on page 78. Otherwise, close the Terminal when the CD ejects.

When it has finished, your CD is up to date, and you can use the CD to boot the current legacy PTE.

32.3.2   Burning a Boot CD under Windows

Here's how to burn a CD to boot the legacy PTE in Windows:
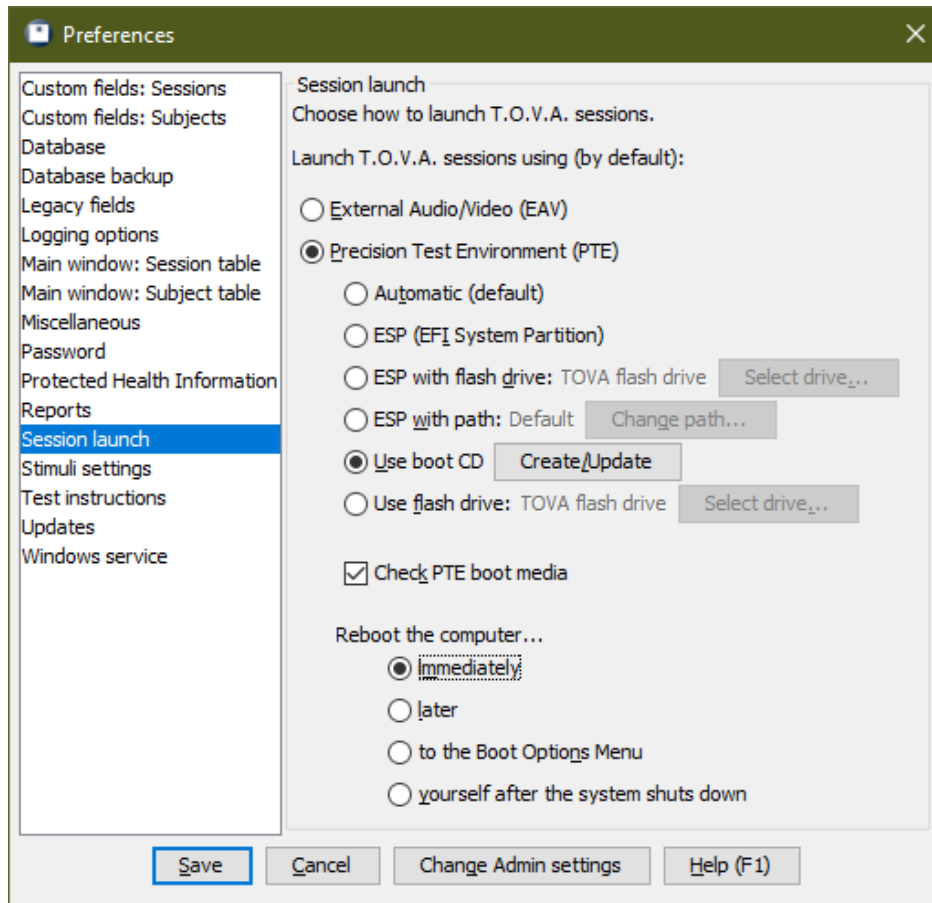
Figure 76: Configuring your system to use the T.O.V.A. CD

1. Insert the T.O.V.A. CD (which is a CD-RW) or another writeable CD. If any Autorun window pops up, close it.

2. Run the T.O.V.A. application.

3. At the bottom of the main T.O.V.A. window, choose **Preferences**.

4. Under **Session launch**, make sure that you are configured for **Precision Test Environment (PTE)** and **Use boot CD** (Figure 76). (That's the only reason to create or update a T.O.V.A. CD.)

5. Next to **Use boot CD**, click **Create/Update**.

6. When prompted to insert the CD, click **OK**.

7. If this is a T.O.V.A. CD, you will be asked if you want to erase the disc (Figure 77). Choose **Yes**.

8. After the disc has finished burning, click **Close**.

9. Back in the T.O.V.A. Preferences window, click **Save** if you changed any settings.
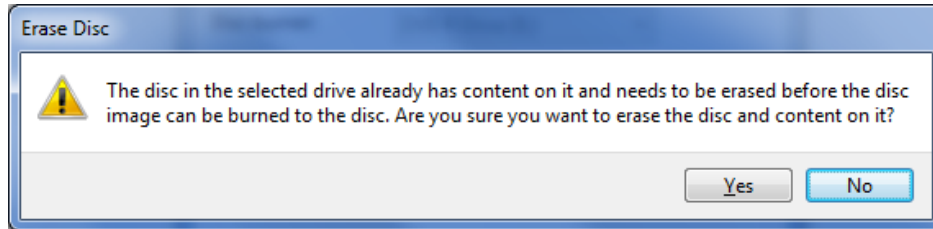
Figure 77: Erase warning—choose **Yes**

The burning process should take only a few minutes. When it's done, you'll have a fresh new T.O.V.A. CD with the current legacy PTE. If you encounter problems burning the CD, try wiping it clean with a tissue or using a different CD-R.

33   Test Instructions

Figure 78: Test Instructions

The T.O.V.A. 8.3 has multimedia test instructions, with text to read and audible instructions to listen to. There are even pictures to illustrate how the test will appear and how to hold the microswitch.

The T.O.V.A. tester may also choose to give test instructions manually. The sections to follow will tell you how to adjust and control the multimedia test instructions to suit your needs and the needs of your subjects.

33.1   Languages

T.O.V.A. test instructions can appear in many languages and variants, so that you can prepare your subject in their native language: Arabic*, Chinese (Mandarin)*, Czech*, Danish, Dutch*, English, French (Canada* and France), German, Hebrew, Hindi*, Italian*, Japanese*, Korean, Norwegian*, Polish*, Portuguese* (Brazil and Portugal), Spanish (Latin America and Spain*), Swahili*, Swedish, and Turkish* are currently available.

We hope to add more languages in the future—contact T.O.V.A. customer service to let us know which languages you'd like us to add (section 26 on page 78). For information on changing the language of your T.O.V.A. Test Instructions, see section 17.4 on page 33.

* These languages or variants are not available in the legacy PTE.

33.2   Controls

By default, the T.O.V.A. test instructions are automatic, but to better control the pace of instructions, you may want to turn off the sound and read the instructions aloud. While the instructions are playing, you can press **S** to the sound turn off and on, the **space bar** to pause the instructions, and the **left and right arrow keys** (or mouse buttons) to go forward or backward. Press **Esc** to skip the instructions completely.

Note: If the instruction audio is turned off or unavailable (missing or unrecognized sound card, for instance), the instructions will not proceed automatically. You must skip through the instructions manually with the **right arrow key** or left mouse button.

33.3   Reading the instructions aloud

The following are instructions you may read aloud to the subject. The wording assumes that you are stepping through the multimedia instruction pages. You may want to adapt them to your needs and those of your subject, particularly if you're only using the book. The images to follow can help you. If you would like these instructions in a different language, please contact T.O.V.A. customer service (section 26 on page 78).

33.3.1   Visual practice test instructions

Read the following:

Welcome to the T.O.V.A. test.

Hold the button in your writing hand with your thumb resting lightly on top of the button, like this.*(indicate Figure 79)* When you press the button, let up as soon as you hear the click *(click the button)*; you don't have to hold it down.

Figure 79: How to hold the microswitch

This test measures your ability to pay attention. Two different squares will flash on the screen. One square has a small black square near the top, like this *(indicate Figure 80)*, and the other has the small square near the bottom, like this *(indicate Figure 80)*. The squares will flash on the screen, like this: *(Multimedia instructions show a brief animation of the test.)*
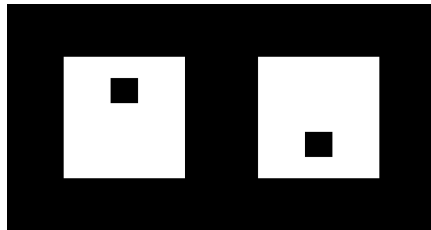
Figure 80: Visual Test Target/Nontarget stimuli

Press the button as fast as you can every time you see a square with the small square near the top and don't press the button when the small square is near the bottom. Once again, press the button only when you see the small square near the top.

Don't guess which square will flash; make sure you see it before you press the button. Try to balance speed and accuracy: press the button as fast as you can, but also try not to make any mistakes. If you do make a mistake, don't worry: anyone can make a mistake on this test.

Let's review:

- Press the button as fast as you can, but only when you see the small square near the top.
- When you press the button, only press it once and don't hold it down. Just "click" the button.
- Finally, don't go too fast or try to guess; take enough time to see which square it is.

You are about to take a short practice test. After a countdown, the squares will begin to flash. Remember, be as fast and accurate as you can.

33.3.2   Visual Test instructions

For subjects over 5.5 years old, read the following:

> You are about to take the T.O.V.A. test, which will take about 20 minutes.
>
> You might notice that your eyes get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when the small square is near the top.

For subjects 4 to 5.5 years old, read the following instead:

> You are about to take the T.O.V.A. test, which will take about 10 minutes.
>
> You might notice that your eyes get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when the small square is near the top.

33.3.3 Auditory Test instructions

Note: Even when the sound is turned off, the multimedia test instructions will demonstrate the auditory stimuli audibly.

Read the following:

Welcome to the T.O.V.A. test.

Hold the button in your writing hand with your thumb resting lightly on top of the button, like this.*(indicate)* When you press the button, let up as soon as you hear the click *(click the button)*; you don't have to hold it down.

Figure 81: How to hold the microswitch

This test measures your ability to pay attention. Two different tones will play on the speakers. One tone is a high note, and the other is a low note. The tones will play every few seconds.

Press the button as fast as you can every time you see hear the high note and don't press the button when you hear the low note. Once again, press the button only when you hear the high note.

Don't guess which tone will play; make sure you hear it before you press the button. Try to balance speed and accuracy: press the button as fast as you can, but also try not to make any mistakes. If you do make a mistake, don't worry: anyone can make a mistake on this test.

Let's review:

- Press the button as fast as you can, but only when you hear the high tone.
- When you press the button, only press it once and don't hold it down. Just "click" the button.
- Finally, don't go too fast or try to guess; take enough time to decide which tone it is.

You are about to take a short practice test. After a countdown, the tones will begin to play. Remember, be as fast and accurate as you can.

33.3.4   Auditory Test instructions

For subjects over 5.5 years old, read the following:

> You are about to take the T.O.V.A. test, which will take about 20 minutes.
>
> You might notice that you get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when hear the high tone.

For subjects 4 to 5.5 years old, read the following instead:

> You are about to take the T.O.V.A. test, which will take about 10 minutes.
>
> You might notice that you get a little tired. Even so, try and do the best job you can. Remember to press the button as quickly as you can, but only when hear the high tone.

34   How-To

This reference section gives simple instructions on technical procedures.

34.1   Disable Sleep mode

When a computer is not being used for a while, some systems are configured to go into "Sleep mode", "Standby mode", "Hibernation", or some other power saving state. While this is good for conserving energy, it can be bad for External A/V testing. Because the T.O.V.A. test does not use the computer or mouse, some systems can fall asleep during a test, which will essentially ruin the results of the test.

The T.O.V.A. tries to counteract this, but it does not work on all computers. To be on the safe side, we recommend that you disable Sleep Mode on any T.O.V.A. system where you intend to do External A/V testing. If that's not possible, the computer's sleep mode should wait at least an hour.

Note: How to disable Sleep Mode on different systems will vary somewhat. If the instructions below don't work for you, contact your system's manufacturer.

1. Click the Start button and type **Power**.

2. From the results, choose **Power options** or **Power and sleep settings**.

3. Navigate to sleep settings and, for when to go to sleep, choose **Never**. **Note:** You may have to disable this in multiple places (**Plugged in**, **On battery**, etc.).

4. If necessary, save your changes.

34.2   Find your data

Having trouble finding your T.O.V.A. data? There are a few possible explanations for this:

- Did you install the T.O.V.A. on a new computer? The T.O.V.A. stores your subjects and sessions in a local database on your computer's hard drive, not on the T.O.V.A. USB device or in the cloud. See **Migrate the T.O.V.A. to a New Computer** (section 34.4 on page 120) for help in moving your T.O.V.A. data.

- If you don't see all of your subjects or sessions, your view might still be restricted by the **Search** field. Clear any text in the field and press **Enter** to view all of your subjects and sessions. Remember that you can sort on any column by clicking the column, and sort the other direction by clicking it a second time.

  Note: Even if there was nothing in the search field to begin with, there can be occasional display glitches. Pressing **Enter** will refresh the contents of the main window and fix most of these problems. If you find any repeatable problems ("Every time I do *this*, the display does *that*."), please let us know. We want to fix any such problems.

- There's an option in the Preferences to not **Display subjects and sessions on startup and blank search** (section 24.11 on page 68, intended to protect PHI from subjects that might appear when you start up the T.O.V.A.

- There are two database configurations: Shared and Separate. You can find your current selection in the Advanced Preferences (section 24.4 on page 64). If you select a **Separate** database, each login on

your system will have its own database, and you will not see each other's subjects and sessions. If you use a different login than usual, then, you won't see your usual subject data.

- Do you have your database stored on a network shared drive? The T.O.V.A. 8.3 only supports storing your database locally, not on a network. See section 24.4 on page 64 for more information.

34.3   Manually update the T.O.V.A.

With the T.O.V.A. 8.3's Automatic Update, we've tried to make keeping your T.O.V.A. up to date with the latest features and fixes easier than ever. However, sometimes automatic update will fail (Did you really close *all* your programs before updating?), and in this case you may want to update your T.O.V.A. manually.

A manual update works just as well as the automatic one, with one caveat: You must have access to Administrator permissions. Here's how you do it:

1. Find the latest update. Go to https://www.tovatest.com/downloads/ and enter your T.O.V.A. USB device's serial number. This will give you the **installer** (a **.pkg** or **.exe** file), and you should download it to somewhere you can find it.

   Note: The installer is a large file (about 300 MB at the moment). If you have problems downloading it, you might need to find a system with a better internet connection. Download the installer from a more reliable connection, copy it to a flash drive, and bring it to your T.O.V.A. computer. If you do not have the flash drive included in your T.O.V.A. kit, you can order one from The TOVA Company.

2. Exit the T.O.V.A. and any other applications that are running (You should do this before installing any application, really).

3. Run the installer. Just like the first time you installed the T.O.V.A., it may confirm/request Admin permissions, ask you to accept the license, etc.

4. Once finished, you may run the T.O.V.A.

That's it! The good thing about a manual update is that it may make apparent what error was causing the update to fail before, and perhaps even let you correct it.

34.4   Migrate the T.O.V.A. to a new computer

Transferring the T.O.V.A. from one computer to another is not really a problem. The T.O.V.A. software can be installed on multiple computers, even if you only have one T.O.V.A. device, and there are no copy restrictions.

T.O.V.A. technical support can answer questions about your specific computers, but here are some general steps:

1. First, review our T.O.V.A. 8.3 system requirements (section 8.9 on page 8), to make sure the T.O.V.A. will work as you expect on the new computer.

2. Next, download the latest version of the T.O.V.A. software by entering your serial number here: https://www.tovatest.com/downloads/.

3. Install the T.O.V.A. software on the new computer, making sure to configure the hardware setup (EAV or PTE) as appropriate to this computer. See **Installing the T.O.V.A.** (section 8.12 on page 10) for more information.

4. The last part of the install is connecting the T.O.V.A. hardware (section 12 on page 17). Make sure to set up the hardware as shown in the installation guide. Your T.O.V.A. test credits are stored on the T.O.V.A. USB device (the black box), so they will come with it to the new computer.

5. Your T.O.V.A. subjects and sessions are stored in a database on the old computer. To move it, you will need to back up that data from the old computer and then import it on the new computer.

   (a) On the old computer, run the T.O.V.A. application and click **Help > Back up database...**. Follow the steps to save all your subjects and sessions to a `.tova` file.

   (b) Copy that file to the new computer. You can copy the backup file to a thumb drive, a shared path on the network, or even a cloud-synced folder.

   (c) On the new computer, double-click the `.tova` file to import the data into the new database.

For more specifics or if you run into trouble along the way, please send us a tech support request (section 26 on page 78) on the old computer and on the new one, or just give us a call.

34.5   Modify Admin Preferences

There are certain T.O.V.A. preferences that require administrative privileges to access. If you are unable to access Admin preferences in the T.O.V.A. 8.3, you should run **T.O.V.A. Admin Settings** with administrative privileges.

Note: Some preferences that *can* be modified in the T.O.V.A. application are *not* accessible in **T.O.V.A. Admin settings**.

The easiest way is from **Change Admin settings** button in the T.O.V.A.'s Preferences window.

1. From the Preferences window, click **Change Admin settings**. The Preferences window will close.

2. When prompted, enter your username/password or agree to allow this program to make changes on your computer (Figure 82).

3. T.O.V.A. Admin Settings will open, allowing you to modify the Admin settings. When you've finished, click **Save** to restart the T.O.V.A. application with the new settings.

You can also use the separate T.O.V.A. Admin Settings application:
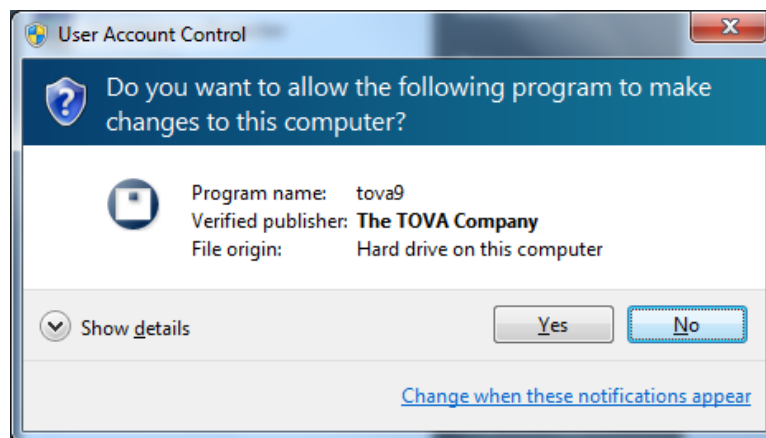

Figure 82: UAC message on Windows 7

1. Quit the T.O.V.A. application.

2. Find **T.O.V.A. Admin Settings** in your Start menu (Windows) or Finder (macOS). On macOS 10.15 or later, use `TOVA_Admin_Settings.command` and blind-type your password when prompted.

3. When prompted, enter your username/password or agree to allow this program to make changes on your computer (Figure 82).

4. T.O.V.A. Admin Settings will open, allowing you to modify Admin preferences.

5. When you've finished, click **Save** and run the T.O.V.A. normally.

34.6   Move the T.O.V.A. database

Moving your database is pretty easy in the T.O.V.A. 8.3.

First, **ALWAYS** back up your T.O.V.A. database (section 20 on page 51) before attempting any procedure like this. Then simply change your database path, and the T.O.V.A. will offer to move the database for you. Here's how it works:

- If you browse to select a database path, `\data` will be added at the end. That `\data` folder (and the files and folders inside it) is your database. If you type your path into the **Path** field, the `\data` folder is not added; your database path will be as you typed it.

- When you choose a new database path and then click **Save**, the T.O.V.A. will check if there is a database there already. If there is, it will connect to the new database and shut down the old one.

- If there is no database at the new path you've chosen, when you click **Save** you'll be given the option to move the previous selected database to the new location. Make sure that the old path and the new path are correct, so that the correct database is moved to the correct location. The database will be copied to the new location and the database at the old location *will be deleted*. Therefore, this should *NOT* be used as any kind of backup technique.

- If there is no database at the new path, and you choose not to move the database, a new database will be created at the new location, containing one example subject.

- If the path does not contain a database, make sure that it is fully accessible and either empty (containing no files or subfolders) or non-existent (the path will be created when it creates the database).

- The T.O.V.A. 8.3 does not support network share databases or simultaneous access by multiple users! **Storing data on a server or network share will most likely result in lost data!** You should store your data locally on the hard drive, and while multiple user logins on the same computer may use the T.O.V.A., each must close the application before the next may open it.

Note: To move your database to a different computer, simply back up your database (section 20 on page 51), copy the backup file to the new computer, and import it (section 21 on page 53).

You can still always move your database as you previously could in the T.O.V.A. This includes these main steps:

1. Exit the T.O.V.A. application.

2. Discover the current location of your database.

3. Move the `\data` folder to the new location

4. Point the T.O.V.A. to the new location of the database.

If you're not comfortable with these steps, contact T.O.V.A. technical support for assistance. We are happy to help.

34.6.1   Notes on choosing a database path

There are a few things to remember when choosing a different database location:

- The T.O.V.A. does not support network share databases. The T.O.V.A. database must be in a folder on your computer's hard drive (usually `C:` or `D:`), not on another computer yours is connected to. **Storing data on a server or network share will most likely result in lost data.** Similarly, we do not recommend storing your database on a flash drive or other portable drive.

- If you are using a **Separate** database (section 24.4 on page 64), there will be a separate database for each user on the system. If moving to a different computer, each of these user's databases (if any) may need to be moved.

- If your computer is shared by multiple users, make sure that all of the users can access the new path to the database.

34.7   Reassign a session to a different subject

Sometimes you may find that a test was administered to the wrong subject. The T.O.V.A. provides a couple of ways to fix this problem. First, a few important notes:

- If the session should have been assigned to a subject that does not yet exist in the T.O.V.A. database, create the subject first, then reassign the session to that subject.

- **Note:** It's important to avoid this mistake. Children below the age of five-and-a-half are not administered the same test format as older subjects. If you administer the wrong test format to your subject, the T.O.V.A. will not be able to properly interpret it.

- **Note:** Please do not try to reassign the test by editing the subject! If the test is assigned to Joe and it should have been assigned to Mary, editing the subject information will only leave you with two identical 'Marys'.

You can reassign a test session by first editing the session and then choosing **Assign to a different subject**.

Figure 83: Edit the session to reassign it

1. Highlight the session in the Subjects or Sessions tabs of the main T.O.V.A. window.

2. Click **Edit** to bring up the **Edit Session Information** window.

3. Click **Assign to a different subject** to bring up the **Reassign Session** window.

4. Select the subject the session should have been assigned to and click **Select subject**.

5. When prompted, confirm that you want to reassign the session.

You can also reassign a session with drag-and-drop. Double-clicking a subject will expand it to show all the tests administered to that subject. You can then click on the test that's misassigned and drag it to the correct subject.

35   Other Features

This reference section contains articles on specific features of the T.O.V.A., discussed in more detail.

35.1   The Main Window
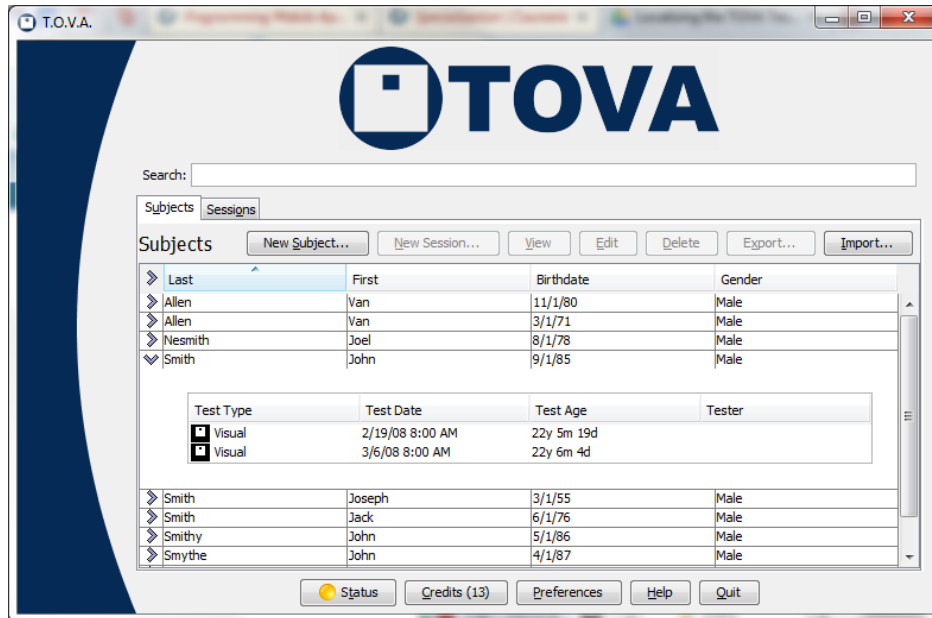
Figure 84: The main T.O.V.A. window

Everything starts from the main T.O.V.A. window. Some of these options may not always be available.

Search - Enter the text or date you're searching for into the Search field and press **Enter**. If you have a lot of subjects and sessions, this is indispensable. See section 35.2 on page 126 for more search options.

Subjects - Click on this tab to browse your list of Subjects. Then, click on the > symbol at the left to display the sessions administered to that subject.

Sessions - Click on this tab to browse your list of Sessions.

New Subject - Create a new subject. See section 17.3.1 on page 31.

New Session - Start a new session for the selected subject. See section 17.4 on page 33.

View - Show a report for the selected session. See section 18 on page 41.

Compare - When you select multiple sessions in the current tab, you can choose **Compare** to see a report comparing the sessions. See section 18.3 on page 44.

Edit - Modify information for the selected Subject or Session. See section 35.3 on page 129.

Delete - Delete the selected Subjects or Sessions. This will permanently remove them from the T.O.V.A. database.

Export - Export the selected Subjects or Sessions to a T.O.V.A. file, CSV, HTML, or PDF. See section 22 on page 57.

Import - If you have old T.O.V.A. 7 data files or T.O.V.A. 8/9 files from a colleague, here you can import that data. See section 21 on page 53.

Preferences - Change the settings for the T.O.V.A. See section 24 on page 62.

Credits - This button tells you how many credits your T.O.V.A. USB device has. Click the **Credits** button to order more. See section 19 on page 48.

Status - This launches the T.O.V.A. Status window. The "light" on the button will be green if all is well and yellow or red if there is a problem. See section 25 on page 75.

Help - Here you can read the other manuals, test the T.O.V.A. USB device and PTE, and contact us. See section 35.5 on page 130.

Quit - Quit the T.O.V.A. This closes all other T.O.V.A. windows.

35.2   Searching/Sorting Techniques

There's a search field at the top of the T.O.V.A. main window. When you type a search term and press **Enter**, the tables update to display subjects and sessions that match your search.

How it works is best explained with an example: If you enter `joe smith`, the search will return the subjects and sessions that contain `joe` and `smith`. This might mean a subject named `Smith` whose T.O.V.A. test was administered by a tester named `Joe`. It will also find subjects and sessions containing a name such as `Joel Nesmith`, and `John Smithy` whose Treatments include `3 cups of Joe`. It won't, however, find records that have `joe` but not `smith` or vice verse; by default, search looks for records containing **all** search terms.

You can also use the `OR` operator. Enter `joe OR smith` to find all the subjects and sessions that contain either `joe` *or* `smith`. **Note:** `OR` must be capitalized, or it will be treated like another search term (`joe or smith` will look for subjects and sessions containing `joe`, `or`, *and* `smith`).

Confused yet? Play around with it–we bet you'll figure it out!

Text searches include the following fields:

- Subject first and last name
- Comments
- Tester name
- Treatments
- Any custom subject field
- Any custom session field

If you give a number (`1234`), then the term is also matched against subject number, session number, and serial number.

You can also use dates: If a term is parsable as a date (`5/12/2009`), the results will include subjects with that birthdate *and* sessions with that test date. You can also use `before:` and `after:`, to provide a range of test dates; for instance, `after:9/1/2004 before:9/8/2004` will return all the tests administered September 1st through 7th, 2004. (**Note:** Test dates are interpreted as 12 midnight, so `after:9/1/2004` includes all tests administered that day, but `before:9/1/2004` would not include any.)

Finally, as with other search engines, you can search on multiple terms. If you enter `john smith`, for instance, you will see all of the subjects/sessions that include the word "joe" and the word "smith" anywhere in the subject or session information (including the comments, tester, custom fields, etc.) You can also enter

35.2.1   Specifying a field to search

You can restrict a search value to a specific field using the following strings. **Note:** With spaces, you must use quotes around field-specific search terms, like this: `"Subject Number:123"`.

Field to search	Type	Labels that can be used
Subject number	numeric	`subject number:`, `sub:`, `subject:`
Session number	numeric	`session number:`, `ses:`, `session:`
First name	string	`first name:`, `first:`
Last name	string	`last name:`, `last:`
First and last	string	`name:`
Comments	string	`comments:`, `com:`, `comm:`
Tester name	string	`tester name:`, `tester:`, `user:`
Medications	string	`medications:`, `med:`, `meds:`, `treatment:`, `treatments:`
Serial number	string	`sn:`, `ser:`, `serial:`, `serial#:`, `serial #:`, `serial number:`
Import date	string	`import:`, `import date:`

You can also search by the age of a subject when tested.

Label	Type	Examples
`age:`	numeric	`age:7` returns all sessions administered to seven year olds.
		(Not subjects who are seven now, only seven when tested.)
`younger:`	decimal	`younger:18`, `younger:5.5`
`older:`	decimal	`older:12` will **not** return a session administered on subject's 12th birthday,
		but **will** return her session administered the next day.

35.2.2   Other notes

- Age searches are based on the age *when tested*, not the current age. Subjects returned are those who have sessions with that test age.

- Searching is case-insensitive: `jOe SmiTh` is the same as `Joe Smith`.

- The `-` prefix prevents matching entries that have that substring in the searched fields. `Joe -Smith` will return all the subjects/sessions containing `Joe` that do not contain `Smith`

- Any string that is surrounded by quotes should be matched exactly (this allows for matching spaces in names), e.g., `Van Allen` as opposed to `VanAllen`. But, `"Joe Smith"` (with quotes) will not return

the subject named `Joe Smith`, because `Joe` and `Smith` are in separate fields. It would return a test administered by `Dr. Joe Smith` however.

- Asterisks are treated literally, not as a wildcard, because we already match substrings; `Joe*` will find neither "Joe" nor "Joel".

35.2.3   Sorting

Sorting your T.O.V.A. data works just like most software. In the main window, click on any column header to sort the rows of the table by that field, in ascending order. So when you click on **Last**, it reorders the rows by the subjects' last name, from 'A' to 'Z'. Click the same column a second time, and it will sort in *descending* order, from 'Z' to 'A'. Simple!

35.2.4   Searching/Sorting Tips

- By default, subjects and sessions are sorted in column order (first column, second column, etc.)

- If you've recently tested a subject, there's a fast way to find the subject quickly:

  1. Click on the **Sessions** tab.
  2. Click on the **Test Date** column header twice. The Sessions table will sort the most recent tests administered to the top.
  3. Highlight the session and then click **New**, and you will create a new test session for that subject.

- If you've recently imported a session or sessions, use search to go right to them:

  1. Click on the **Sessions** tab.
  2. Click on the **Import Date** column header twice. (**Note:** If the Import Date column is not visible, go to **Sessions table** in the **Preferences**, section 24.8 on page 67.) to add it to the visible fields.
  3. The Sessions table will sort the most recent tests imported to the top.

- To sort on multiple columns, click the column headers in reverse order. For instance, to order sessions by gender and then by test date, click on **Test Date**, then **Gender**. You'll get all the female subjects' sessions in chronological order, then all the males'.

- Even if you're hiding Protected Health Information (see section 23 on page 60), you can still search on subject name and other protected fields.

- If you have a lot of subjects and sessions, it can take a while for the T.O.V.A. to finish loading them. Don't wait! Immediately type the subject name you're looking for, before the others finish loading, and press **Enter**. The loading process will stop and instead load only your search results.

  For instance, if you run the T.O.V.A. intending to retest Mary Smith, type `Mary` and press **Enter**, and you'll only see those subjects or sessions. If that's taking too long, add `Smith` and press **Enter** again. Or enter gibberish (such as `ujxzda`) and press **Enter**, and it will clear the search results and stop loading altogether.

35.3   Edit Session Information

Figure 85: The Edit Session window

After you administer a session, you may want to add more information, such as medications administered (see **Treatments**, section 35.4 on page 130) or comments about the session that you did not note beforehand. You can also update any custom session fields you have added to your T.O.V.A. database. From the main window, select the session and click **Edit**.

Note: While you can also modify the test date/time here, you should do so with caution. It will affect the calculated age of the subject and dictate the norms used to interpret the results of the test. If your system clock is incorrect, please correct it. If it does not hold the correct time, this can be a serious system problem; you may want to consider using a different system to administer the T.O.V.A. in the future.

35.3.1   Advanced session information

This is where you can correct calibration values for the T.O.V.A. test. This should never be necessary if the T.O.V.A. is configured correctly, so *DON'T TOUCH THIS SETTING* without consulting with T.O.V.A. technical support (section 26 on page 78).

35.4   Treatments
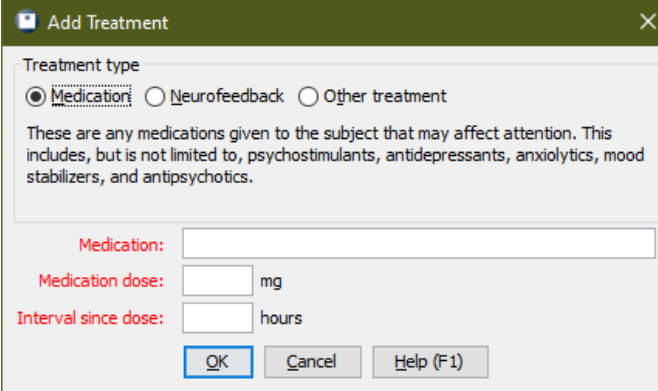
Figure 86: Enter the medication information

You can track medications and other treatments in the T.O.V.A. 8.3. When starting a new session or editing an administered session, click **Add** to add a treatment to the list. There is no limit to the number of treatments you can add to a session.

You can add three different types of treatments:

- **Medications** - These are any medications that may affect attention, including psychostimulants (e.g., methylphenidate), but also those that may affect attention secondarily (e.g., antidepressants).

- **Neurofeedback** - Neurofeedback treatment session details

- **Other treatments** - Details of any other treatment for attention

35.5   The Help Window

Here you can read the other manuals, test the T.O.V.A. USB device and PTE, and contact us.

Figure 87: The Help Window

35.5.1   T.O.V.A. System Information

This displays information about your T.O.V.A. software and hardware, useful to T.O.V.A. technical support.

35.5.2   Contacting Us

If you need to contact The TOVA Company for support or service, this tells you all you need to know, such as our phone number and web address. For the best service, click one of these buttons to use our built-in Support/Service Request feature. See section 26 on page 78.

35.5.3   Documentation

You can access any of the manuals or other T.O.V.A. documentation from the Help window. If you want to learn more about the T.O.V.A., we've put all the information here:

User's Manual - You're reading it now!

Professional Manual - Describes the internal guts of the T.O.V.A. from a test construction and statistical point of view

Installation Guide - Can help you set up the T.O.V.A. software and hardware

Getting Started - Goes directly to the **Getting Started** section of the User's Manual

Sync interface manual - Information on using the T.O.V.A. Synchronization Interface (not included in the T.O.V.A. 8.3 kit)

Observation Form - This form is designed to provide information about factors that may influence T.O.V.A. test results. This form should be filled out prior to the administration of each test.

Release Notes - Information on changes to the T.O.V.A. software

License Agreement - Important legal information about the T.O.V.A.

Business Associate Agreement - A legal agreement designed to help protect your subjects' personal
   health information (section 23.1 on page 60)

35.5.4   Advanced Support

For the most part, you will not need to use the Advanced Support features here. However, if you contact
T.O.V.A. technical support, they may ask you to try one of these operations to help diagnose a problem.

Try out the PTE - This option is useful when you've installed the T.O.V.A. on a new system, and you
   want to make sure the PTE will boot correctly. It is not useful if you're configured for EAV testing.
   See section 31.1.2 on page 104 for more information.

Collect hardware information from PTE - Automatically reboots your system to and from the PTE for
   the purpose of collecting critical hardware information. You should probably only do this if requested
   by T.O.V.A. technical support. It is disabled and not useful if you're configured for EAV testing.

Check T.O.V.A. hardware - Contains a number of functions to test your T.O.V.A. hardware and its
   connections (section 28.3 on page 90)

Back up database - A quick and easy way to back up your entire T.O.V.A. database (section 20 on page
   51)

Close - Closes the Help window.

35.6   T.O.V.A. PTE Activation service

Note: This section applies only to Windows users.

The T.O.V.A. PTE Activation service is a background service we install on Windows to perform important
tasks related to booting the PTE and installing T.O.V.A. updates. Windows users with limited permissions
would not normally have access to all the functions this service performs. Therefore, instead of requiring
that all T.O.V.A. users have Admin rights in Windows, the T.O.V.A. service acts as a system administrator
to carefully perform these operations on request. These include the following:

- Making temporary changes to the Boot Configuration Data

- Making changes to your UEFI firmware

- Moving files related to booting the PTE

- Rebooting your system

- Verifying the authenticity of updates to the T.O.V.A. and then installing them

35.6.1   Service status

Click the **Status** button on the main window and then **Service**, and you'll see the current status of the T.O.V.A. PTE Activation service. If the service has unexpectedly stopped or failed to start, click **Start service** to attempt to restart the service. (**Note:** This requires administrator access to your computer.)

View Windows services will launch the Windows Services console. Here you can see all of your installed Windows services, including the T.O.V.A. PTE Activation service.

If you are unable to resolve any problems, you can disable communication with the T.O.V.A. service (see section 35.6.2 on page 133 for details). Otherwise, click **Send to tech support...** for more help with the problem.

35.6.2   Disabling service communication

Some Windows systems encounter problems with the T.O.V.A. service (conflicting security settings, for instance). If these problems persist, you can disable service communication, effectively asking the T.O.V.A. software to work around the service problems.

The T.O.V.A. service performs necessary operations that many Windows users don't have access to. When you disable the service, the T.O.V.A. performs the same operations without employing the service. Since these are advanced operations, you may be prompted to "allow the following program to make changes to this computer" before and after launching a T.O.V.A. session. Granting this permission requires you to have administrator access to your system.
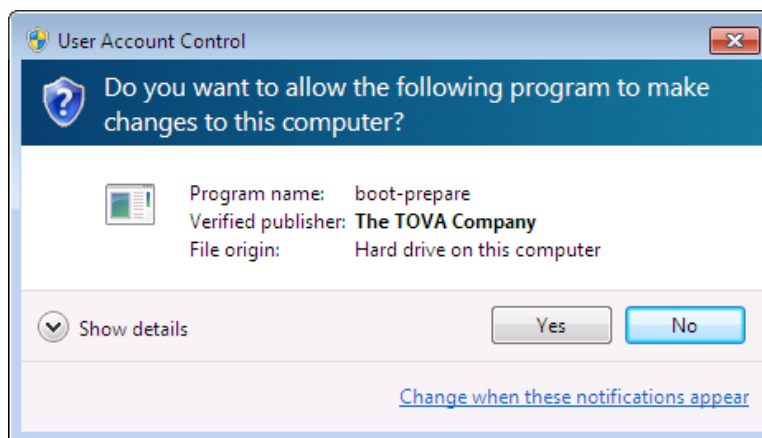
Figure 88: Without the service enabled, you must grant the T.O.V.A. permission to make changes

You can disable service communication as follows:

1. Run the T.O.V.A. program and choose **Preferences**.

2. Choose **Windows Service**.

3. Uncheck the **Enable communication with T.O.V.A. PTE Activation service** box and click **Save**.

After that, launch a T.O.V.A. session to try it out. If you are unable to grant the permissions the system needs or if the prompts become tiresome, contact T.O.V.A. tech support (section 26 on page 78) for additional alternatives.

35.6.3   Service errors

The T.O.V.A. PTE Activation service is a background service we install on Windows to perform important tasks related to booting the PTE and installing T.O.V.A. updates.

Figure 89: Failure to connect to the service

If you see the dialog above (Figure 89), there can be several reasons:

• **The T.O.V.A. service may have failed to start.**

  You can start the service manually:

  1. Go to **Start**, **Run** or hold the **Start** key and press **R**.
  2. Enter `services.msc` and press **Enter**. This brings up the **Services** window.
  3. Highlight **T.O.V.A. PTE Activation** and, if it's not already running, **Start** the service.

  If you receive an error, the service won't start, or it stops after it starts, please send a Tech Support Request to T.O.V.A. technical support (see section 26 on page 78 for details). You may have software that is blocking the service, or it may not have installed properly.

• **The T.O.V.A. service may still be starting up.**

  Windows startup is a little funny, and sometimes the T.O.V.A. 8.3 application starts up before the service. The T.O.V.A. will wait and try five times to communicate with the service, but depending on your system's configuration, speed, age, etc., it's possible that it might take longer. If you find that the T.O.V.A. service is already running, try restarting the T.O.V.A. to see if it still fails to communicate.

• **Port 26001 may be blocked or reserved**

  The T.O.V.A. service communicates locally on port 26001 by default. Windows Firewall, even if it blocks that port, will not block our communication because it's local to your machine; in other words, we don't use that port to communicate over your network or the internet. If you must block that port on your system, you can change the port number the software uses—contact T.O.V.A. tech support for assistance with this change.
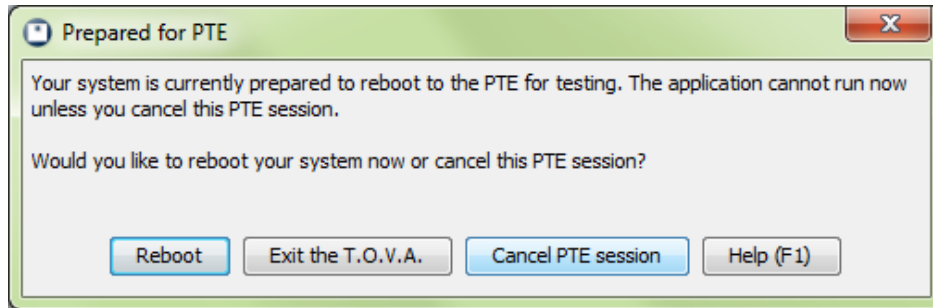
35.6.4   "Prepared for PTE"

Figure 90: Ready to boot the PTE

Some users might not want the T.O.V.A. to reboot their system, and so we offer the option to reboot **later** in the PTE launch settings. The T.O.V.A. prepares your system to boot the PTE and then exits. If, instead of rebooting your system, you run the T.O.V.A. application, you will see this window (Figure 90), giving you the option to have the T.O.V.A. reboot your system or cancel booting the PTE. The latter will clear away the prepared files, restore your normal boot settings, and start the T.O.V.A. application.

35.7   Double-Blind Studies

If you are participating in a double-blind study, the T.O.V.A. includes features to support you. Under **Miscellaneous** in the Preferences window (section 24.9 on page 67), there is an option to **Include blinded subjects**. Checking this option will enable the T.O.V.A. to create blinded subjects and to separately enable or disable the automatic backup of their data to our servers (section 24.5 on page 65). Subjects will be blinded by default, and you will **NOT** be able to view reports for their data. Additionally, blinded subjects **cannot be unblinded** (or vice versa) after they are created. ***Please do not enable this feature unless directed by T.O.V.A. technical support or by those managing your study.*** Contact T.O.V.A. Customer service (section 26 on page 78) for more information.

36   Problems

This section discusses problems you might encounter with the T.O.V.A.

36.1   Errors in the T.O.V.A.

Yeah, we'd prefer there weren't any errors in our software too. But occasionally—sometimes even through no fault of our own—the unexpected occurs.
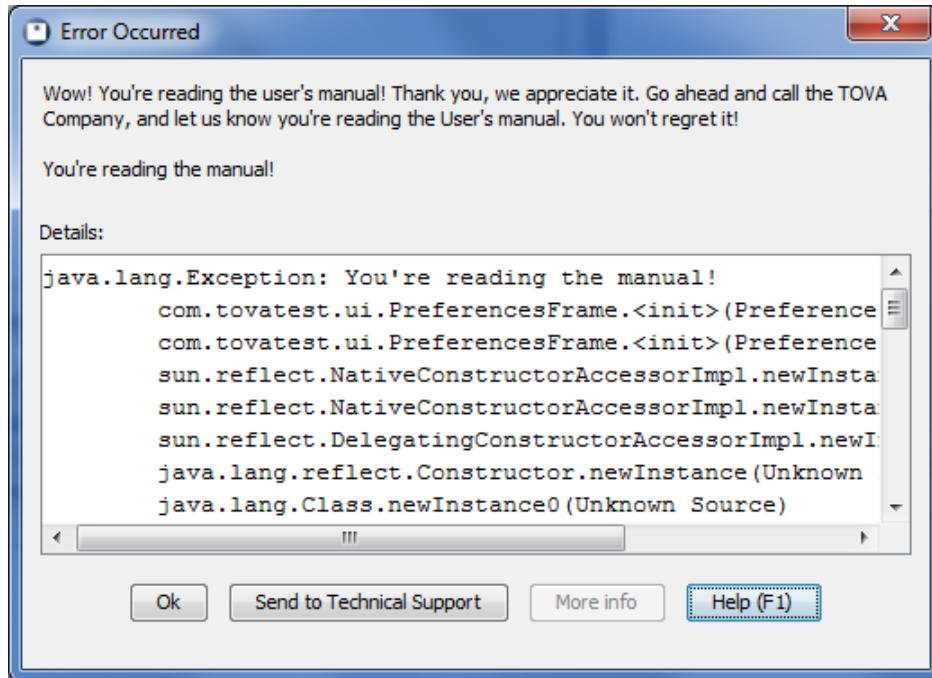

Figure 91: An Error window

Sometimes the error may make perfect sense to you. We try to generate meaningful error messages, but it's not always possible.

If a message confuses or disturbs you, please contact T.O.V.A. technical support. The best way to alert us is using the T.O.V.A.'s built-in tech support interface: Just click 'Send to tech support...' from most error windows or see section 26 on page 78 for more information. If your need is urgent, you can call us at 1-800-PAY-ATTN (1-800-729-2886), or you can email us at info@tovatest.com. Best of all, our Tech Support is always **FREE**!

36.2   Database fails to open

There are a few different reasons why a database may fail to open:

WARNING! Storing data on a server or network share will most likely result in lost data! Many of the problems below can be caused by attempting to share a T.O.V.A. database over a network. This is **NOT** supported and will cause problems.

The T.O.V.A. database is locked by another user. While you may share a T.O.V.A. database between multiple users on a system, the T.O.V.A. application cannot be run by multiple users simultaneously. User 1 and User 2 may both run the T.O.V.A. application on the same computer, and they may either share a database or each have their own database (section 24.4 on page 64), but User 1 *must* exit the T.O.V.A. application completely before User 2 may run it. The T.O.V.A. 8.3 does not support simultaneous access by multiple users at this time.

The database path is not valid. It may include characters that your operating system doesn't allow for path names. The path may be to a drive that no longer exists or is unavailable.

You may not have full access to the T.O.V.A. database. The T.O.V.A. database is a folder containing many other files and subfolders. Any user of the T.O.V.A. will need full access to all of those files and folders, even if they don't intend to make changes. It may be that you have logged in as a different user than before, or that the permissions on the database files or folders have been changed. Examine the permissions on your T.O.V.A. database path, contact your IT department to correct the problem, or contact T.O.V.A. technical support for assistance (section 26 on page 78).

Your database fails to upgrade after updating to 8.2. This can be caused by minor database corruption—contact T.O.V.A. technical support for assistance (section 26 on page 78).

The T.O.V.A. database may have become corrupt. It is possible for problems to occur in the T.O.V.A. database: a system might shut down unexpectedly or your system's hard drive could glitch or fail. The database automatically corrects many problems, but some issues cannot be fixed automatically. **Note:** Serious database corruption can be caused if you locate your T.O.V.A. database on a network server or shared drive.

The T.O.V.A. 8.3 has built-in automatic backups (section 24.5 on page 65), though we recommend you also perform your own system backups to a secure location. If you have full access to the database path and the T.O.V.A. database still fails to open, please contact T.O.V.A. technical support (section 26 on page 78). We can often help users recover some or all of their data.

36.2.1 Moving the database aside

If your T.O.V.A. database cannot be opened, the T.O.V.A. may offer to move the non-working database aside. If successful, the T.O.V.A. can then create a new, empty database where the former database was. That way, you can test new subjects, then contact The TOVA Company at a convenient time to recover your previous data, if possible. The original database that could not be opened will be preserved, renamed, in the same database folder.

36.3 The T.O.V.A. application is already running? (Windows-only)

If you try to run the T.O.V.A. and you get this message, it indicates that the T.O.V.A. is already running. If you were to run your Windows Task Manager, though, you would not find `tova.exe` and killing `tova-pte-svc.exe` would not help you.

The T.O.V.A. is a Java application (which is why it runs on both Windows and Mac systems) and runs on your system as `tova-jvm.exe`. If you arrive at this window, click **Restart** to tell the other T.O.V.A. instance to exit. On the other hand, if you perhaps forgot the T.O.V.A. application was already running, you can just click **OK**, and the new instance will exit.

If the T.O.V.A. encounters a serious problem and the previous instance will not terminate, reboot your computer or click **OK** and end any other `tova-jvm.exe` tasks that are running. Or just contact T.O.V.A. technical support (section 26 on page 78). We're happy to help.
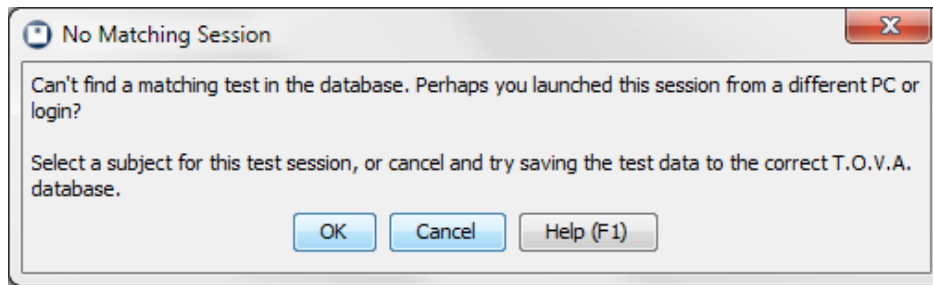
36.4 Problems saving a session

Figure 92: Find subject

If you encounter a message like this saving a session to your database, it can be confusing. It usually indicates that you are trying to save a session to a different database than launched it. This can happen if you are running the T.O.V.A. on multiple computers or from different logins on the same computer. If you can, exit the T.O.V.A. application and try to save the test data on the original computer and login.

If you cannot, click **OK**, and you will be prompted to either match the session to the same subject in this database or to create a new subject with the name, birthdate, and gender from the test data on the device. Any additional information you entered in the New Test Session window (Treatments, Tester, Comments, etc.) will need to be re-entered, but the critical information and test data will be saved.

36.5 Resolving duplicate subjects
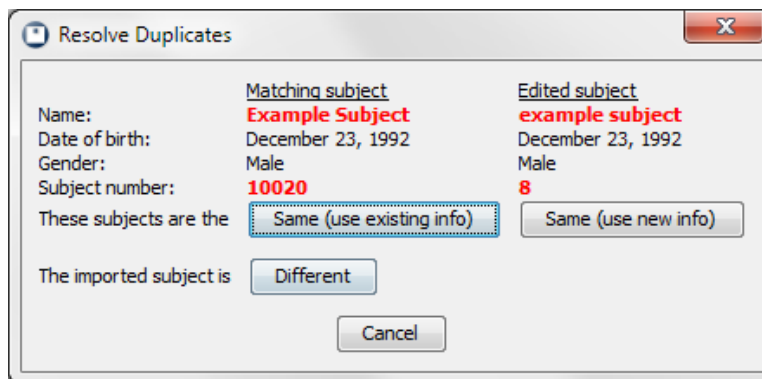
Figure 93: Are these actually the same subject?

If the T.O.V.A. finds that a new or edited subject looks similar, but not identical, to another subject in the database, it will ask you to resolve the situation. Often this can happen if a subject has been entered as "John" and "Jack" or the name was just misspelled.

You are asked to decide if the two subjects are actually different people or not. If they are the same subject, choose either the new subject information or the existing information from the similar subject.

37   Frequently Asked Questions (FAQ)

This is where we try to anticipate and answer questions you might have about the T.O.V.A.

37.1   General Questions

How long is the T.O.V.A. test? The T.O.V.A. test is 21.6 minutes long. A shorter 10.8-minute T.O.V.A. test is automatically administered to subjects ages 4 to 5.5 instead.

What does this term or that acronym mean? See section 38 on page 140.

Will the T.O.V.A. work on my new computer? Previous versions of the T.O.V.A. Precision Test Environment (PTE) were not compatible with newer computers. The new software should boot the PTE and function on most old and new computers. If you have problems, please contact T.O.V.A. tech support (section 26 on page 78). We can often fix or work around any issues.

If the PTE is not compatible with your computer, you should still be able to use the External A/V hardware setup (section 12.2 on page 19). Please review our system requirements (section 8.9 on page 8) for more information.

Will the T.O.V.A. work on my old computer? The T.O.V.A. no longer supports Windows XP, Vista, or earlier Windows versions, or Mac OS X 10.8.4 or earlier. Please review our system requirements (section 8.9 on page 8) for details.

My computer doesn't have a VGA video port. How can I use the External A/V hardware setup? See section 12.2.2 on page 20.

Why can't I connect to the PTE service? See section 35.6.3 on page 134.

Why can't the T.O.V.A. detect my USB device? See section 28.1.2 on page 86.

I hear a little static or high-pitched noise coming from my speakers. What is that? Can I stop it? See section 28.8.4 on page 100.

What do I do if the automatic update fails? You can try again or try manually updating the T.O.V.A. See section 34.3 on page 120 for details.

The T.O.V.A. is doing something weird. How can I send you a screenshot? See section 26.5 on page 80.

How do I add my custom fields to the main window? You can change which fields appear from the Preferences. See section 24.3 on page 63.

37.2   Testing

Where's the calibration screen? If you're testing without rebooting, what we call External A/V (EAV) testing, you must connect your monitor to the **video out** port of the T.O.V.A. USB device. If you haven't done this correctly, you may first notice this when you try to calibrate your display and the calibration image doesn't appear. Please check your connections and make sure the monitor is plugged into the correct video port. See section 12.2 on page 19 for more details.

My display calibration failed. What does that error message mean? See section 28.5 on page 94.

How do I pause, go back, skip forward, turn the sound off, or skip the instructions entirely? See section 33 on page 113.

What if I can't hear the audio? See section 28.6 on page 96.

My system keeps booting the PTE and won't boot back to Windows! If the CD or flash drive has boot priority, it will keep booting until it is removed or another device is given priority. Remove your T.O.V.A. CD or flash drive, and click 'Done' or reboot your computer.

37.3   Managing T.O.V.A. data

How do I back up my T.O.V.A. data? See section 20 on page 51.

Some or all of my subjects and sessions are gone. Where did they go? See section 34.2 on page 119.

I just imported a bunch of T.O.V.A. data files. How do I find those sessions now? See section 35.2.4 on page 128.

What if I administered a test for the wrong subject? See section 34.7 on page 123.

How do I move my database? See section 34.6 on page 122.

37.4   Report

How do I add my custom fields to the report? See section 18.1 on page 42.

How do I add pages to / remove pages from the report? See section 18.1 on page 42.

How do I convert copied table data from a T.O.V.A. report page back into a table? See section 18.4 on page 45.

How do I view a comparison report? See section 18.3 on page 44.

37.5   Ordering credits

Why do I see "Ordering test credits has been disabled on this T.O.V.A. USB Device"? Your T.O.V.A. USB device is not enabled for ordering unless or until we have billing information for your account. If you encounter this error, you should contact T.O.V.A. customer service, and they will be happy to help you resolve the problem.

38   Glossary of Terms

In this manual, we use numerous acronyms, abbreviations, and technical terms, so we've tried to define all of our proprietary terms and acronyms here.

Note: If you don't find it here, you can easily search the electronic .PDF version of this manual.

boot CD - A CD used instead of your normal OS to boot your system. See **T.O.V.A. CD**.

T.O.V.A. flash drive - A USB flash drive included with your T.O.V.A. kit that you can use to install the T.O.V.A. and/or boot the PTE.

EAV - An **External Audio/Video**—sometimes called External A/V—session is a test session you can administer without rebooting your system. The timing is managed by the T.O.V.A. USB device, but this test requires an external monitor and speakers. See section 30 on page 102 for more details.

external monitor/display - This is a display that is not part of the rest of the computer. Some systems, such as laptops or "All-in-One" computers, have a screen that is a part of the rest of the computer. To administer an External A/V test (section 30 on page 102), you must also have a *separate* CRT or LCD display with a VGA connection to the 'video out' port of the T.O.V.A. USB device. Otherwise, you may choose to administer a PTE test (section 31 on page 103) instead.

In other words, you can use most laptops or notebooks to administer an External A/V test *if* you also have a separate display you can attach to the T.O.V.A. USB device.

external speakers - Most laptops or notebooks have speakers that are built into the computer. You cannot use these to administer an auditory EAV test (section 30 on page 102, though you can probably still administer a PTE test (section 31 on page 103) instead.

In other words, you can administer an EAV auditory test on a laptop or notebook *if* you have a separate display and speakers you can attach to the T.O.V.A. USB device.

Note: Some monitors have built-in speakers. You can use these displays to administer an External A/V test provided they have separate video and audio plugs you can attach to the T.O.V.A. USB device.

install CD - The T.O.V.A. install CD is no longer available. See T.O.V.A. CD.

OS - Your **Operating System** may be Windows or macOS. It's the layer between the programs you run and all your computer's hardware.

PC - Personal computer. Often this is used to specifically refer to Windows computers, but it may apply to a computer running macOS or Linux.

PHI - Protected Health Information is your subjects' personal data, specifically the subject name and any custom fields you've marked as **Protected Health Information**. There are options for protecting PHI in the T.O.V.A. preferences (section 24.11 on page 68).

PTE - Our **Precision Test Environment** requires you to reboot your system, but it allows you to administer T.O.V.A. tests on a laptop without an external monitor or speakers. See section 31 on page 103 for more details.

subject - Someone taking the T.O.V.A. test. You might call them a patient, client, student, or customer.

Session mode - This is the EAV or PTE, where you can view instructions, run practice tests, etc.

test mode - See Session Mode.

T.O.V.A. CD - Used on many systems as a PTE **boot CD**. It is not included with your T.O.V.A. kit but is available upon request. You can also burn the T.O.V.A. CD boot image to a blank CD or an old T.O.V.A. CD (section 32.3 on page 111).

The T.O.V.A. CD can no longer be used to install the current T.O.V.A. software. Instead, install the software from our website (https://www.tovatest.com/downloads/.

test credits - A test credit is used each time you save a session from the T.O.V.A. USB device. You **must** have test credits to administer T.O.V.A. tests. See section 19 on page 48 for more information on test credits.

T.O.V.A. USB device - The T.O.V.A. USB device is our black box that is required for running the T.O.V.A. 8.3. See section 28.1 on page 85 for more details.

user - If you are reading this manual, you are a T.O.V.A. user. We use the term "user" to refer to the clinicians and other testers who provide the T.O.V.A. test to subjects.