Test of Variables of Attention®

T.O.V.A. 8 USER'S MANUAL

The TOVA Company
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T.O.V.A.® 8 User's Manual

Test Of Variables of Attention Continuous Performance Test

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Part I

Getting Started

Welcome to the T.O.V.A. 8 User's Manual. Feel free to jump right in and install the T.O.V.A. by skipping to Part II (section II 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.

1 About This User's Manual

This manual is the T.O.V.A. version 8 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
- 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

This User's Manual does *not* explain how to use the T.O.V.A. in a clinical or research context. For that information, please our other manuals:

The Clinical Manual helps the clinician use the T.O.V.A. to assess attention and to identify and monitor attention deficits.

The Screening Manual helps the non-clinician use the T.O.V.A. to screen for attention disorders and establish baselines of attention.

The Professional Manual describes the internal guts of the T.O.V.A. from a test construction and statistical point of view.

2 About the T.O.V.A.

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

The Test of Variables of Attention is an objective, standardized, and highly accurate continuous performance test (CPT) that is used to measure attention and impulsivity. The Visual T.O.V.A. and the Auditory T.O.V.A. are non-language-based, sufficiently long (21.6 minutes) computerized tests that require no left-right discrimination or sequencing. Responses are recorded with a specially designed, highly accurate (1 ms) electronic microswitch. It's sort of like a very simple, very boring video game.

The T.O.V.A. measures key components of visual and auditory attention. These measurements are then compared to those of a group of people with attention disorders and a group without. The T.O.V.A. can also establish a personal baseline of attention for future comparison or track response to treatment, including medication. It can even flag possible symptom exaggeration.

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

The Clinical version of the T.O.V.A. is used by licensed clinicians, such as psychologists, physicians (including psychiatrists, neurologists, pediatricians and family practitioners), physician assistants, researchers, pharmaceutical companies, licensed clinical counselors, nurse practitioners, and clinical nurse specialists.

The Screening version of the T.O.V.A. is used by schools, learning centers, and other educational settings, rehabilitation programs, non-licensed health care professionals, and others who don't need or qualify for the Clinical version.

2.3 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.
- It is extensively normed for both children and adults (ages 4 to 80+)
- It precisely measures reaction times (±1 ms)
- It is language and culture free.
- It promotes efficient and effective communication with parents and schools by means of the Individualized Success Strategies.

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

2.4 How does the T.O.V.A. Test work?

It's quite simple: the T.O.V.A. flashes stimuli on the screen (or beeps stimuli on speakers) and the subject taking the T.O.V.A. 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 T.O.V.A. Tests are a little over 20 minutes long. 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 *helps* the clinician with their diagnosis and treatment of attention disorders.

2.5 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 dozens of peer-reviewed papers on the T.O.V.A. (see the T.O.V.A. Professional Manual for an annotated bibliography) that show how these variables correspond to disorders of attention.

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

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

Reaction Time: People with attention disorders tend to respond to stimuli slower than normals.

Commissions: People with attention disorders 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 disorders.

2.6 What's all this about precision timing?

Because reaction times, and even more importantly, the variability of reaction 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 reaction times can be only *tens* of milliseconds. And because that's the most sensitive variable in a CPT, it's crucial that the reaction 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, Macintosh, and 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 Macintosh OS X), and it stinks.

So how do we get around this timing issue?

The T.O.V.A. 8 has two ways of resolving this:

External Audio/Video (EAV) session - For the first time, the T.O.V.A. 8 allows you to run a T.O.V.A. Test *in your OS*, because the timing is managed with precision by the new T.O.V.A. 8 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. This is an

update of the T.O.V.A. 7 approach, and for many users (for instance, using a laptop without an external monitor), rebooting to the PTE will still be the best solution. The new T.O.V.A. 8 PTE is more reliable with a cleaner interface. See section 24.1 on page 88 for more information.

2.7 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 new and improved T.O.V.A. 8 hardware, which only passes our costs on to you. If upgrading from the T.O.V.A. 7, you are only charged for the difference in prices between the two.

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, **clinical support is free**. This means we have staff whose job it is to help you interpret T.O.V.A. results. Do you have questions on how to use the T.O.V.A. to measure treatment effects? 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.

2.8 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 the PC. The T.O.V.A. has over 40 years of ongoing research behind it.

For a more complete history of the T.O.V.A., see the Clinical or Screening Manual.

2.9 How is the T.O.V.A. 8 different from the T.O.V.A. 7?

We answer this question thoroughly in our section for **T.O.V.A. 7 Users**, section 3 on page 7.

2.10 T.O.V.A. 8 System Requirements

- x86 or x86-64 processor running at 1 GHz or better
- 512 MB of memory available
- Minimum of 100 MB hard drive space (enough for the T.O.V.A. with about 250 sessions)

- USB port (on the PC, not via an external hub)
- Screen size must be 10 inches or more.
- **PTE testing** requires a VESA video mode of 1024 x 768 x 16-bit.
- **External A/V testing** requires an external display (with a standard VGA connection) and external speakers.

2.10.1 Windows installation requirements

- Windows XP (32-bit, SP2 or above), Vista, or 7

2.10.2 Macintosh installation requirements

- Mac OS X 10.6.2 and higher
- PTE supported using boot CD only

2.11 What's in the T.O.V.A. 8 Kit?

Figure 1: The T.O.V.A. 8 kit

The following items should be included in the kit:

Software: The bootable T.O.V.A. 8 CD with T.O.V.A. 8 install and manuals.

Hardware: The T.O.V.A. USB device, microswitch, boot drive, and USB, audio, and video cables.

Manuals the T.O.V.A. Installation Guide, User's Manual, Professional Manual, and either the Clinical or the Screening Manual.

2.12 How do I use the T.O.V.A. 8?

We have a whole section about devoted to **Using the T.O.V.A.** (section III on page 25).

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

How do I install the T.O.V.A. 8? (section II on page 10)

How do I administer a T.O.V.A. Test? (section 10 on page 26)

How do I import my T.O.V.A. 7 data? (section 14 on page 44)

How do I view a report? (section 11 on page 38)

How do I order T.O.V.A. Test Credits? (section 12.1 on page 41)

How do I contact The TOVA Company? (section 19 on page 63)

2.13 Other questions?

See our **Frequently Answered Questions** section, section 22 on page 71.

3 T.O.V.A. 7 Users

If you are familiar with the T.O.V.A. 7, you'll notice that a lot has changed in the T.O.V.A. 8. The next sections cover the new features and important changes to the T.O.V.A.

3.1 New features of the T.O.V.A. 8

What's new? Pretty much everything! We've completely revamped the user interface, hardware, data storage, reports, credits system, and online help.

- You can administer a T.O.V.A. Test without rebooting (section 10.4.2 on page 30).
- The T.O.V.A. 8 is compatible with Windows Vista, Windows 7 and Mac OS X.
- The T.O.V.A. 8 works better with Windows XP.
- The new T.O.V.A. device uses your USB port, instead of the now-obsolete parallel port (section 23.1 on page 73).
- There's a more powerful user interface (section 26.1 on page 108).
- We've improved the individual and comparison reports (section 11 on page 38).
- Individual T.O.V.A. files have been replaced by a searchable database (section 3.3 on page 8).
- There are new HIPAA-compliance features (section 16 on page 51)
- You can keep your T.O.V.A. up-to-date automatically (section 20 on page 67).
- Contacting Technical Support, Clinical Support, or Customer Service is now built into the software (section 19 on page 63)

Really, there's only one thing that hasn't changed: the T.O.V.A. Test itself. It's still the most precise, accurate, and objective measure of attention in the industry, and it's still very boring.

Beyond all these new features, however, there have been integral changes that T.O.V.A. 7 users should be aware of. In the sections to follow, we cover these in detail.

3.2 Test credits vs. Interpretation credits

If you've used the T.O.V.A. 7, you're probably already familiar with "credits", a charge per test for using the T.O.V.A. The T.O.V.A. 7 used **Interpretation credits**. The basic process for administering a test in the T.O.V.A. 7.3 was this:

1. Enter the subject and session data and save it to a data file.
2. Reboot to the PTE.
3. Administer the test. The data is saved to the PTE boot image.
4. Use a credit to interpret the test (or wait until you return to Windows).
5. Reboot back to Windows.

6. Save the test results to the data file.
7. View the T.O.V.A. Report.

While the T.O.V.A. 7 had Interpretation credits, the T.O.V.A. 8 uses **Test credits**. Instead of deducting a credit when you generate a report, the T.O.V.A. 8 deducts a credit when you save your test data to the T.O.V.A. database. With the T.O.V.A. 8, the process goes like this:

1. Enter the subject data or select an existing subject.
2. Enter the session data and save it to the database.
3. Reboot to the PTE or administer an EAV test without rebooting.
4. Administer the test. The data is saved to the T.O.V.A. USB device.
5. If in the PTE, reboot back to your OS.
6. Use a credit to save the test results to the database.
7. View the T.O.V.A. Report.

What's the same?

- You administer a T.O.V.A. test, use a credit, and see the test results.
- You still only use one credit per administered test.

What's different?

- You must have test credits available to administer the T.O.V.A. Test.
- You must use a credit to save the T.O.V.A. Test data.

Note: The T.O.V.A. 8 does not recognize the T.O.V.A. 7 hardware. If you still have your T.O.V.A. 7 hardware, it could contain unused T.O.V.A. 7 Interpretation credits. Send your T.O.V.A. 7 hardware in to us, and we'll exchange your remaining T.O.V.A. 7 credits for the same number of T.O.V.A. 8 test credits. Contact Customer Service (section 19 on page 63) for details.

3.3 T.O.V.A. database vs. T.O.V.A. data files

In the T.O.V.A. 7, your subjects' session data was saved and organized into individual data files, with names like `01012101.M09`. If you knew your subject's number, you could sort your files and find your subject's test that way. Some files might be credited, others might not.

The T.O.V.A. 8 stores all your session data into a database. Sessions are grouped by subject, so that it's easy to see how many tests a subject has taken and compare them. You can search the database and sort the results. All the test data in the database is credited, which means you can easily view any test's results and interpretation. And, you can still save your T.O.V.A. sessions to export files and easily share them with colleagues.

Plus, you can import all your T.O.V.A. 7 data into the T.O.V.A. 8 database! That way you can organize all of your T.O.V.A. 7 and T.O.V.A. 8 data in one place and even view T.O.V.A. 8 reports on the T.O.V.A. 7 data. For more about importing, see section 14 on page 44.

3.4 Export to text file

In the T.O.V.A. 7, you could export your T.O.V.A. data to a formatted, plain-text file. This could be useful for when you wanted to save the T.O.V.A. Report and raw test data.

A number of features in the T.O.V.A. 8 replace this functionality:

- Your T.O.V.A. sessions can be exported to a .PDF file, to share with colleagues or subjects without printing them out.
- Your raw data and statistics can be exported to a .CSV file and imported into Excel or another spreadsheet program.
- Your sessions can be exported to XML (ZIP-compressed or not) and imported into other T.O.V.A. 8 databases.

  For more about exporting, see section 15 on page 49.
- When viewing the T.O.V.A. Report, click **'Copy Page'** or **'Copy Report'** to copy the text of the report to your clipboard and then paste it into another program, such as Microsoft Word. See section 11 on page 38 for more information.

3.5 Other changes

There are some other important changes that T.O.V.A. 7 users should know about.

- The new T.O.V.A. USB device calibrates to your monitor, for improved timing accuracy. See section 10.5.1 on page 32.
- Interventions are now called "Strategies". See section 21 on page 70.
- New multimedia test instructions automate preparing your subject to take the T.O.V.A. Test. See section 10.5.2 on page 33.
- Additional credits can now be ordered over the internet. See section 12 on page 41.
- The new PTE has a simpler interface devoted exclusively to administering T.O.V.A. tests. You can no longer edit subject information, print to DOS printers, or change preferences in the PTE.
- There is no more "Customer number", only T.O.V.A. USB device **Serial numbers**.

Part II

Installing the T.O.V.A.

In Part II 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.** 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. 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

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 4 on page 11.
   - **Installing the T.O.V.A. on Mac**? See section 5 on page 15.
2. Next, you should **configure the T.O.V.A.** : See section 6 on page 18.
3. After you've installed the software, **install the hardware**: See section 7 on page 20.
4. 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 8 on page 22.
   - **Uninstalling the T.O.V.A. on Mac**? See section 9 on page 24.

4 Installing the T.O.V.A. 8 on Windows

4.1 Starting the T.O.V.A. 8 CD

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. Insert the T.O.V.A. 8 CD into your CD-ROM drive.
3. On XP, the T.O.V.A. 8 installer should begin installing. On Vista or 7 you may be prompted; choose **'Run T.O.V.A. Setup for Windows.exe'**.
4. If nothing happens when you insert the CD:
   (a) Go to **'My Computer'**
   (b) Right-click on **'tova8'**
   (c) Choose **'Autoplay'** or **'Install or run program'**

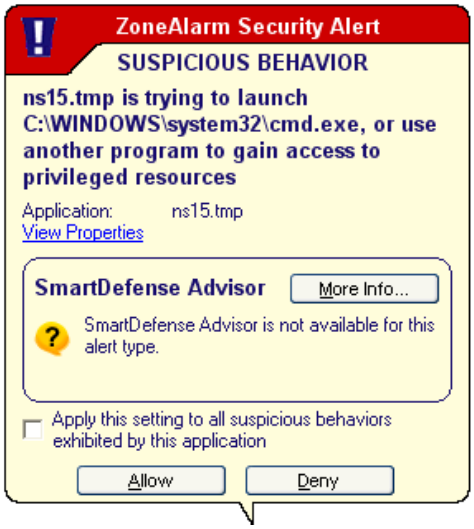

Figure 2: If you get a warning during install, please choose **'Allow'**.

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.

4.2 Welcome screen

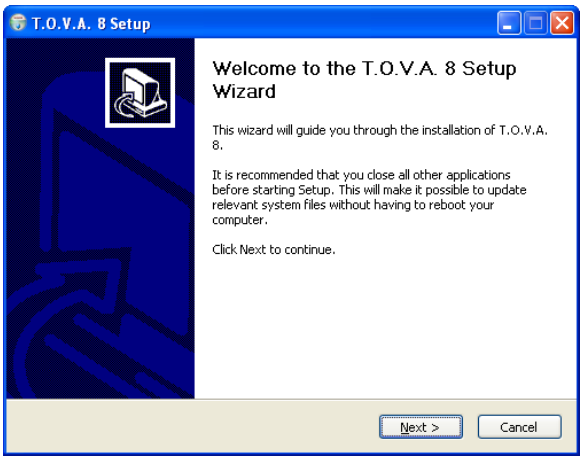

Figure 3: The T.O.V.A. 8 installer welcome screen

Once you see the Welcome screen (Figure 3), the installation has begun. Click **'Next'**.

4.3 License agreement

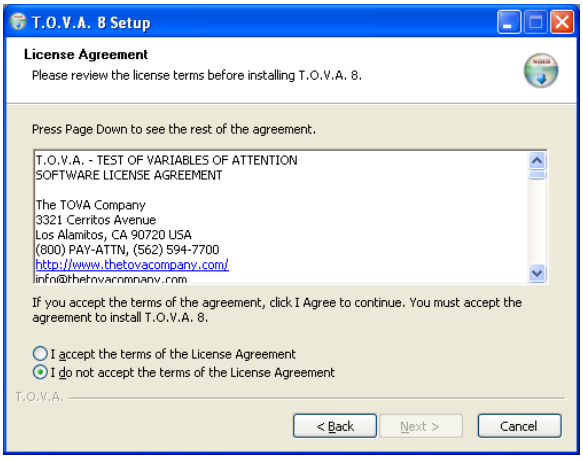

Figure 4: The T.O.V.A. software license

If you accept our License Agreement (Figure 4), choose **'I Agree'** and click **'Next'**. If you don't accept it, then you can't install the T.O.V.A. 8, so click **'Cancel'**. And then give us a call, because we'd love to know why you don't agree with it.

From this point on, we strongly recommend that you accept all defaults (just click **'Next'**).

4.4 Choosing the install folder

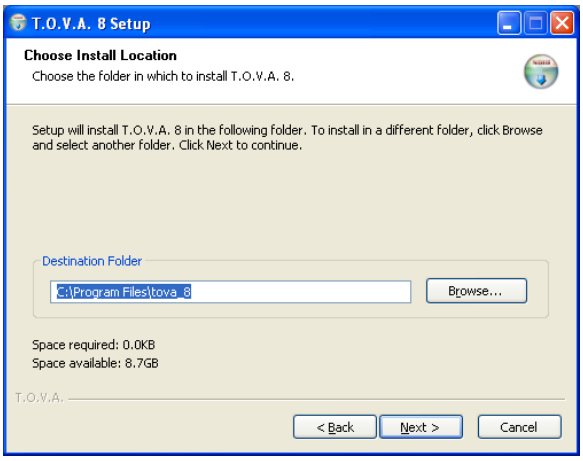

Figure 5: Choosing a destination path

Figure 5 shows the Destination Location page. You will probably want to accept the default.

4.5 Installing files

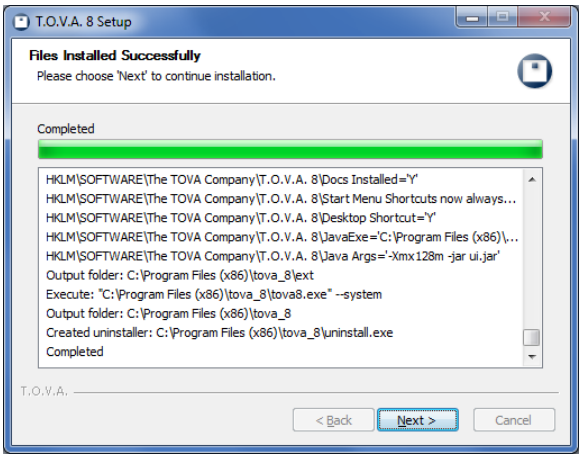

Figure 6: Installing files

While the T.O.V.A. 8 files are installing, you'll see Figure 6. It could take a few minutes.

4.6 Installation finished

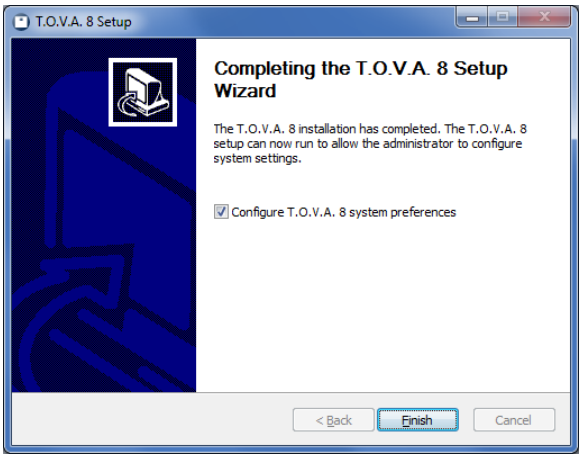

Figure 7: T.O.V.A. 8 installer is finished!

You've finished installing the T.O.V.A. files. You'll notice in Figure 7 that **'Configure T.O.V.A. 8 system preferences'** is checked by default. The T.O.V.A. 8 installation has finished, and your next step should be to configure the T.O.V.A. 8 for this system. Proceed to section 6 on page 18.

5 Installing the T.O.V.A. 8 on Macintosh

5.1 Starting the T.O.V.A. 8 CD

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. Insert the T.O.V.A. 8 CD into your CD-ROM drive.
3. Double-click on **'tova_8.0-*version*.dmg'**. This will open a new window for this disk image.
4. Double-click on **'T.O.V.A. Installer for Mac'**.

5.2 System check

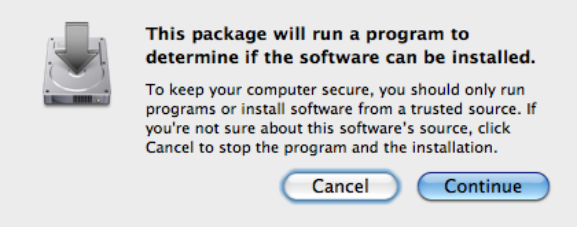

Figure 8: The T.O.V.A. 8 system check dialog

First, the installer will check whether your system meets the minimum system requirements for running the T.O.V.A. 8. Click **'Continue'**.

5.3 Introduction screen

Figure 9: The T.O.V.A. 8 installer Introduction screen

Once you see the Introduction screen (Figure 9), the installation has begun. Click **'Continue'**.

5.4 Read Me

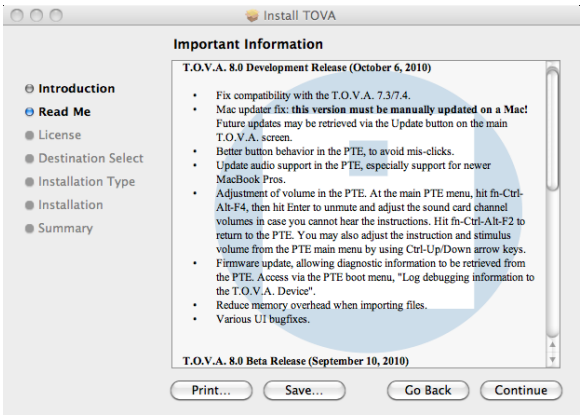

Figure 10: The T.O.V.A. 8 installer Read Me screen

The release notes for the current version are displayed. Click **'Continue'**.

5.5 License

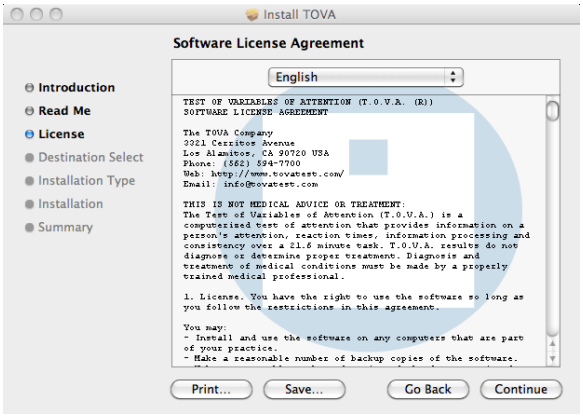

Figure 11: The T.O.V.A. 8 installer License screen

The software license agreement for the T.O.V.A. 8 is displayed. Click **'Continue'** after reading, then click **'Agree'** to proceed with installation.

5.6 Installation Type

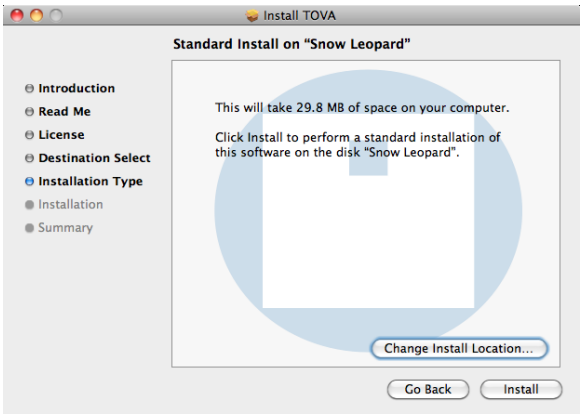

Figure 12: The T.O.V.A. 8 installer Install Type screen

This screen shows how much space will be taken by the installation and is the final confirmation before installation takes place. 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.

You will then be asked for your password in order to briefly grant the administrator privileges required to complete installation. Enter your password and click **'OK'**.

5.7 Summary

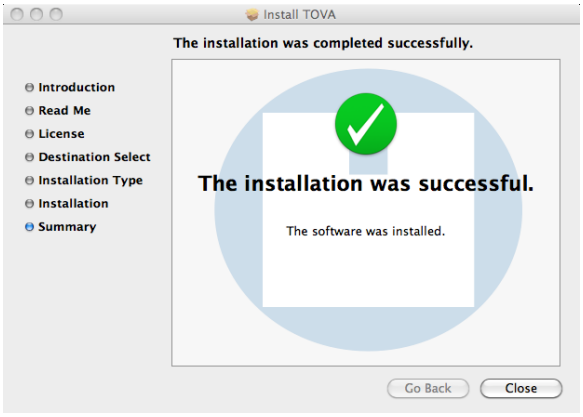

Figure 13: Installation complete

Installation should complete in a few seconds. Press **'Close'** to quit.

You've finished installing the T.O.V.A. files. The T.O.V.A. 8 installation has finished, and your next step is to configure the T.O.V.A. 8 for this system. Proceed to section 6 on page 18.

6 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 14: Configuration Wizard

Database type and location - If you are the only one using your T.O.V.A. system, you can accept the default. If not, do you want to have a separate database for each user or one shared database for all users? For more information, see **Database**, section 18.1 on page 57. Click **'Next'**.

Default session 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. For more information, see section 10.4.2 on page 30. Click **'Next'**.

Advanced - There are a few other settings you may want to alter as an Administrator. Click **'Advanced'** to review all of the T.O.V.A. preferences, such as:

- **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 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.

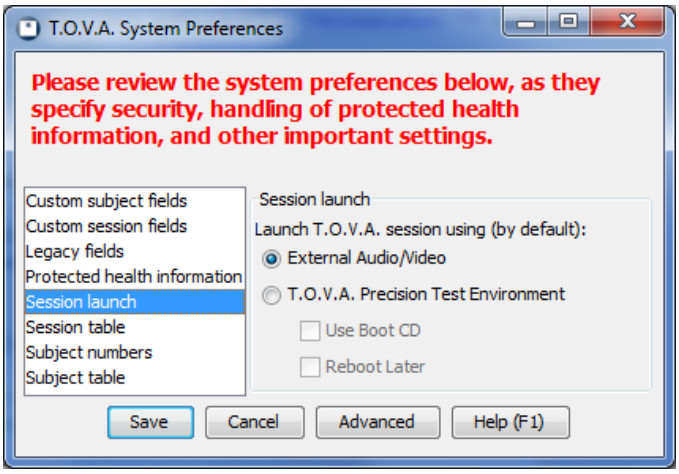

Figure 15: Advanced configuration

You can always go back and change these options later under **'Preferences'** or by running **'T.O.V.A. 8 Setup'** from the Start menu, but system-wide preferences will always require Administrator permissions to change. You can find more information on T.O.V.A. **Preferences** in section 17 on page 52.

Once you have saved your configuration selections, your last step should be installing the T.O.V.A. 8 hardware. Proceed to section 7 on page 20.

7 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 PC. For more information, see section 23.1 on page 73.

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 23.2 on page 80.

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 16: The T.O.V.A. Hardware

7.1 Basic hardware setup

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.
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 17: USB

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

7.2 External Audio/Video setup

After you've connected the T.O.V.A. USB device to the computer as suggested above, there are additional connections to make for External A/V testing (tests that don't require rebooting your computer.)

Note: If you have a laptop and you want to run an External A/V test, you must have an external monitor and speakers.

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 PC 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'**.

Now you should be set up to administer External A/V sessions.

Note: 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.

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

We *strongly* recommend that you go ahead and read the quick and helpful 'Using the T.O.V.A.' guide: See section III on page 25.

8 Uninstalling the T.O.V.A. 8 in Windows

There may be times when you'll want to uninstall the T.O.V.A. 8. 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!

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'**.
2. Highlight **'T.O.V.A. 8'** and click on **'Remove'** (Depending on your Windows version, the button may say **'Change/Remove'** or **'Add/Remove'**).

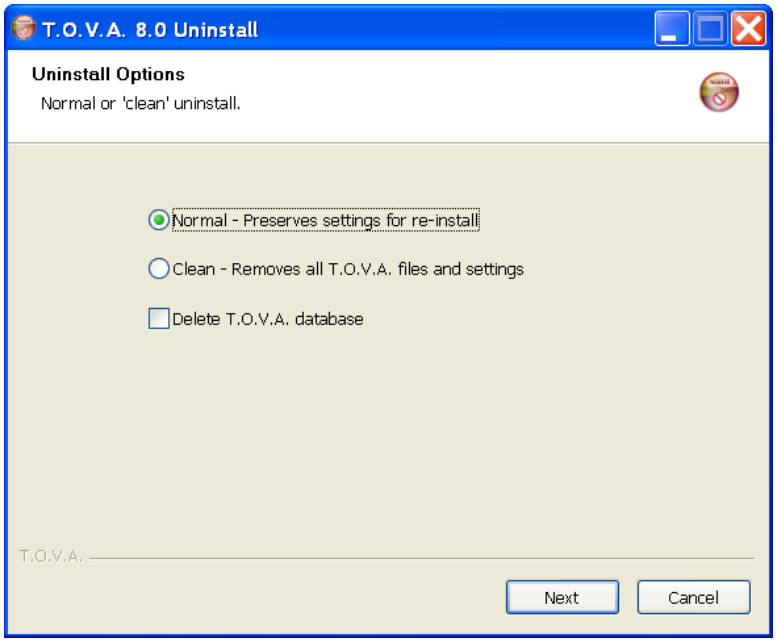

Figure 18: Choose your uninstall options

3. Uninstall options - Most of the time, you will want a **'Normal'** uninstall, which will leave behind:
   - Your T.O.V.A. 8 database (section 18.1 on page 57 for location).
   - Some settings and log files at the install folder, usually '`C:\Program Files\tova_8` (On 64-bit, '`C:\Program Files (x86)\tova_8`.
   - A few registry entries in `HKEY_LOCAL_MACHINE\SOFTWARE\The TOVA Company\T.O.V.A. 8`.
   - On Windows XP, there may also be backups of your boot.ini file in `C:\Program Files\tova_8\boot`.

   If you choose **'Clean'**, the uninstaller will do its best to remove all files and registry settings, except for the T.O.V.A. database, where your test session data is stored. If you want even the T.O.V.A. database removed, select **'Delete T.O.V.A. database'**, but **please note that this will remove all your T.O.V.A. test data**.

   Note: Even a clean uninstall will not remove the .NET Framework or the Java Runtime Environment. You can select and uninstall those separately, but we do not recommend it. They may be required for other software you have installed.

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.

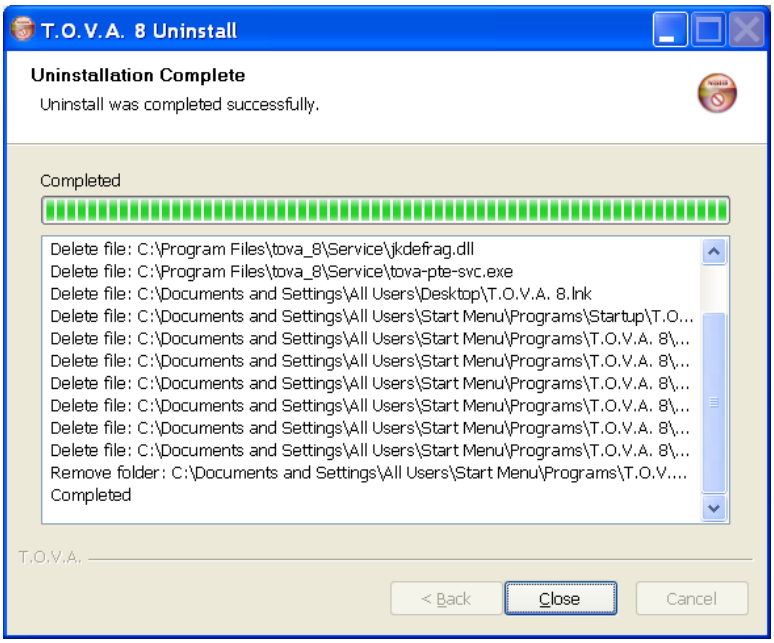

Figure 19: Details of the uninstall

9 Uninstalling the T.O.V.A. 8 on a Mac

There may be times when you'll want to uninstall the T.O.V.A. 8. 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 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. logs in your home folder's `Library/Logs/tova_8_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 in `/Library/Preferences/com.tovatest.data.plist`.

We have also included a command script on the T.O.V.A. Install CD to remove all traces of the T.O.V.A. from your system. You will find it in `TOVA8/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**.

Part III

Using the T.O.V.A. 8

In Part II 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 10 on page 26
- **The T.O.V.A. Report**, see section 11 on page 38
- **Backing up the T.O.V.A. Database**, see section 13 on page 43
- **Ordering Test Credits**, see section 12.1 on page 41
- **Importing T.O.V.A. 7 or T.O.V.A. 8 files**, see section 14 on page 44
- **Exporting**, see section 15 on page 49
- **Protecting Personal Health Information**, see section 16 on page 51
- **Settings and Preferences**, see section 17 on page 52
- **Individualized Success Strategies**, see section 21 on page 70
- **How Do I Ask a Question?**, see section 19 on page 63

10 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.

10.1 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

10.2 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. Please see "Pre-test Preparation" in the Clinical or Screening manual for details.

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

10.3 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.

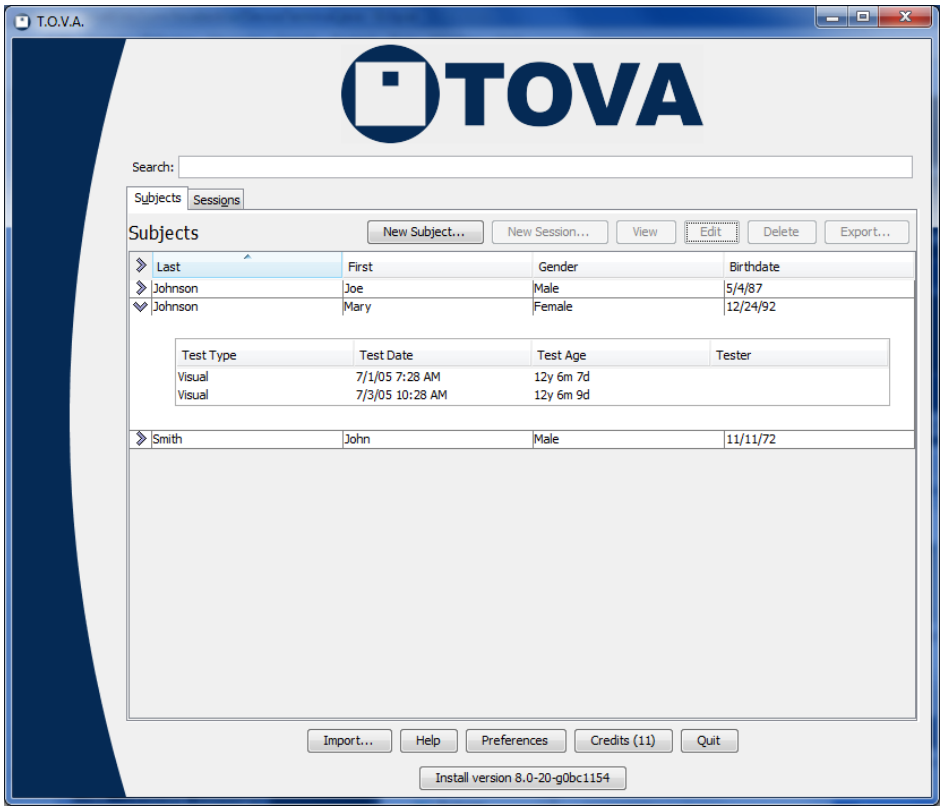

Figure 20: Main T.O.V.A. window

10.3.1 Creating a new subject

Creating a new subject is easy.

Notice first the red labels on **Birthdate** and **Gender** (Figure 21). 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.

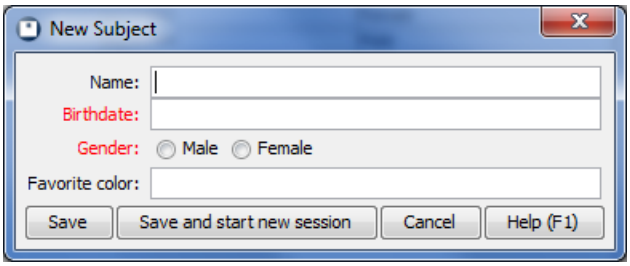

Figure 21: New Subject window

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 birth date, please check the age to make sure you've entered it right.

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 17.1 on page 52.

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 10.4 on page 29.

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

10.3.2 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 20) 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 26.2 on page 109. 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'**.

10.4 Entering test session information

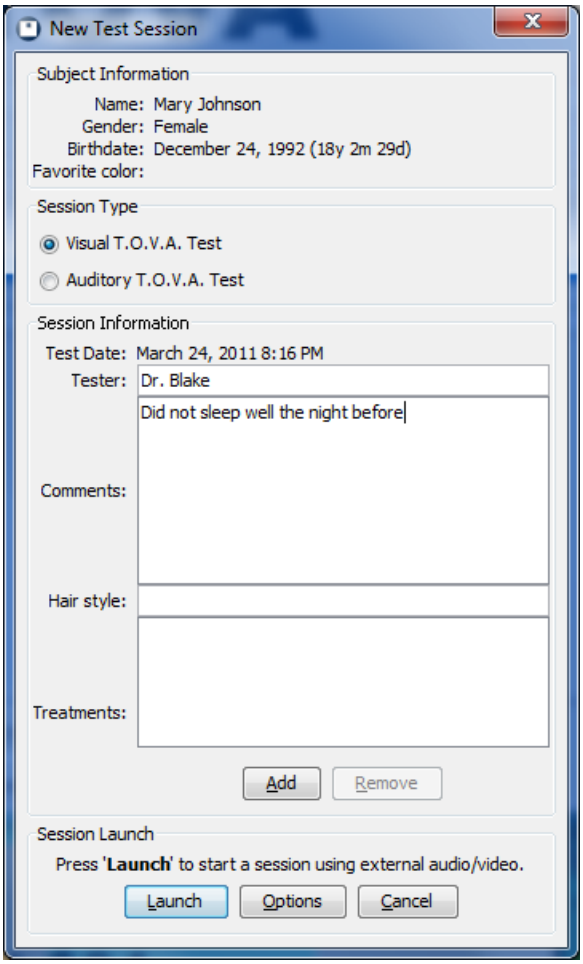

Figure 22: Enter session information

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.

Adding treatments, including medications and dosages, will aid in interpreting the test. You can flag a medication as "Challenge" if it's being tested for its effect on an attention problem. 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 17.4 on page 54), but if you want to change these settings for this session, click on the **'Options'** button.

10.4.1 Launch options

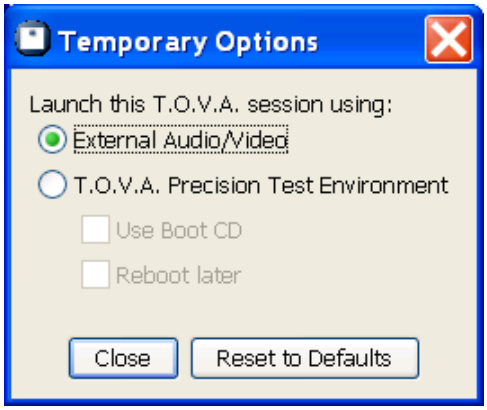

Figure 23: Change launch options for this session

Let's say you decide you want to administer an External A/V session in your OS instead of rebooting to the PTE. Or 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. If you want to change the setting for every future session, on the other hand, you must make that change in the Preferences (section 17.4 on page 54).

Once you've configured the session launch options how you want them, click **'Close'**. Let's look briefly at the two testing environments.

10.4.2 External Audio/Video session

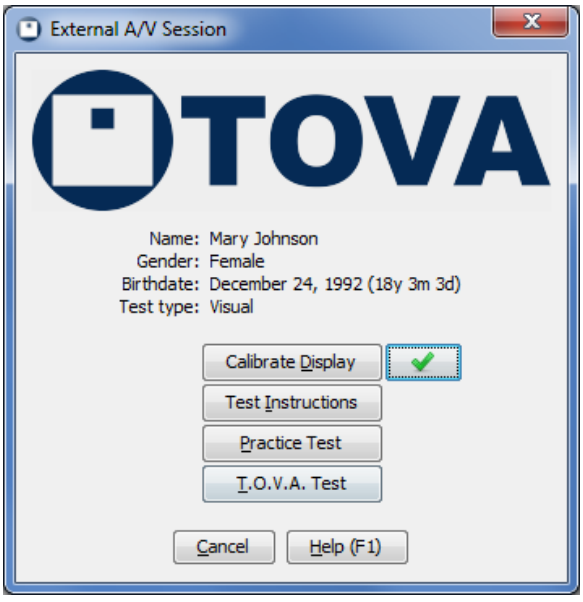

Figure 24: External A/V session

The T.O.V.A. 8 supports a new kind of T.O.V.A. Test session, the **External Audio/Video session**, that does **NOT** require rebooting your system. That's because instead of relying on your system clock, video,

etc., the new T.O.V.A. 8 hardware handles the timing itself.

What an External A/V session **DOES** require is a desktop system *or* a laptop with an external monitor (and speakers for the Auditory test). There must be a monitor plugged into the T.O.V.A. USB device for T.O.V.A. testing without rebooting to the PTE. Once we manage the video and microswitch, removed from unpredictable OS delays, you have the same reliable timing precision and accuracy we have been providing for decades.

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 25.6 on page 103 for more information.

10.4.3 PTE session

The T.O.V.A. 8 also continues to offer the **Precision Test Environment (PTE)**. Unlike the T.O.V.A. 7.3 PTE, it is exclusively a testing environment. Editing subject information, adding/using credits, and reporting are only available back in the main T.O.V.A. application.

There are two PTE options that need explanation here:

- **'Use boot CD'** - By default, when you click **'Launch'**, the T.O.V.A. will modify your system's boot configuration to trigger the PTE when you reboot. If you encounter problems with the way we modify your boot configuration, or if you prefer that the T.O.V.A. not make changes to your system's boot configuration, you can use a boot CD (or other media) instead. This requires inserting the CD before rebooting. If your system fails to boot the CD, you may need to make changes to your BIOS configuration (See section 24.2 on page 91) for more information.) **Note:** On Mac, the T.O.V.A. CD is always required to boot the PTE.
- **'Reboot later'** - To launch a PTE session, you will need to reboot your system. This will happen automatically when you click **'Launch'**, or you can select **'Reboot later'** and the T.O.V.A. will exit, but not reboot.

Note: Be sure to save your work in other applications before restarting your system.

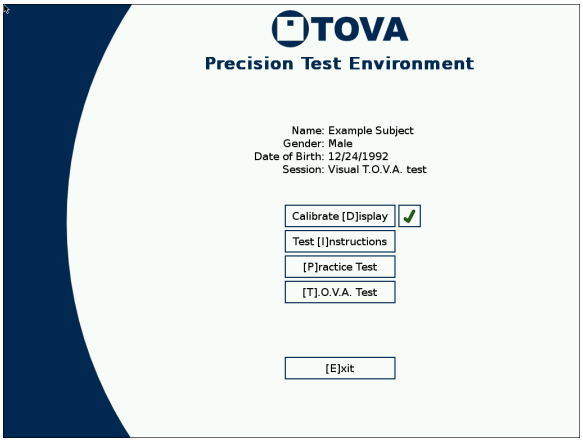

Figure 25: The Precision Test Environment

For more information on the Precision Test Environment, see section 24.1 on page 88.

10.5 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.

10.5.1 Calibration

Note: If you're administering an Auditory T.O.V.A., you will skip this step and go right to test instructions, section 10.5.2 on page 33.

There are more different kinds of monitors than ever, and because accurate, precise timing is so critical to testing, we've added a new feature to the familiar T.O.V.A. microswitch.

Figure 26: 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 idiosyncrasies in your monitor. 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 27: Calibrating the TOVA 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 10.4.2 on page 30 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 23.4 on page 84 for more information if you encounter problems during calibration.

10.5.2 Test instructions

The next step is giving the subject instructions on how to take the T.O.V.A. Test. The T.O.V.A. tester can give those instructions manually (section 25.7 on page 104), as with previous versions of the T.O.V.A., or the T.O.V.A. itself can provide these instructions, with text to read and auditory instructions to listen to. There are even pictures to illustrate the instructions. Click the **'Test Instructions'** button to start the instructions.

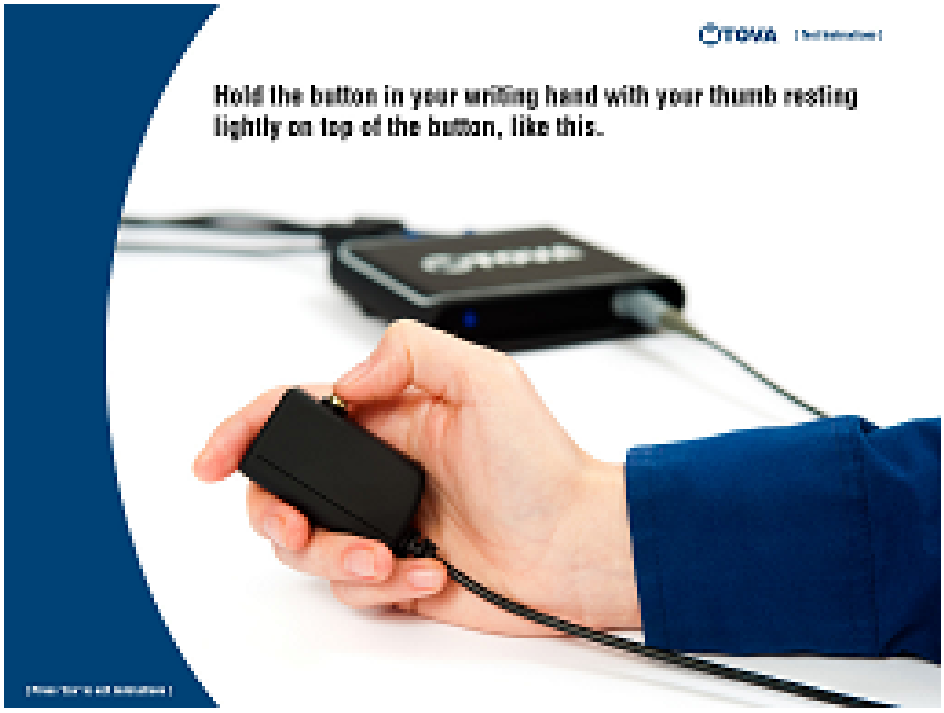

Figure 28: Test Instructions

Controls By default, the instructions are automatic, but you may find you need more control over how they play. While the instructions are playing, you may press **'S'** to turn off and on the sound, the **space bar** to pause the instructions, and the **left and right arrow keys** to go forward or backward. Press **'Esc'** to skip the instructions completely.

Note: If the T.O.V.A. cannot play audio (missing or unrecognized sound card, for instance), the instructions do not proceed automatically. You must skip through the instructions manually with the **right arrow key** or **space bar**.

10.5.3 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 29), perhaps the subject needs further explanation. The subject can re-take the Practice Test if necessary.

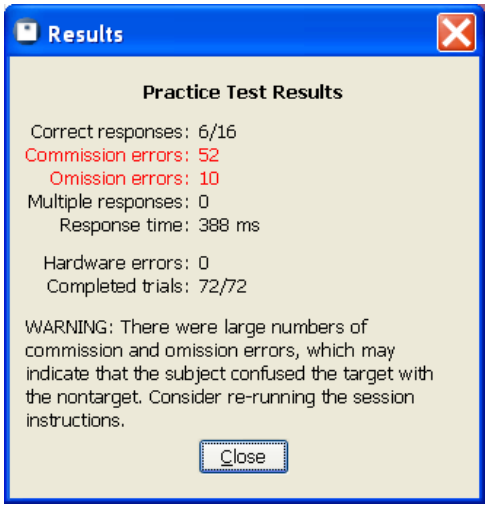

Figure 29: Results of a misunderstood Practice Test

10.5.4 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 26.6 on page 113).

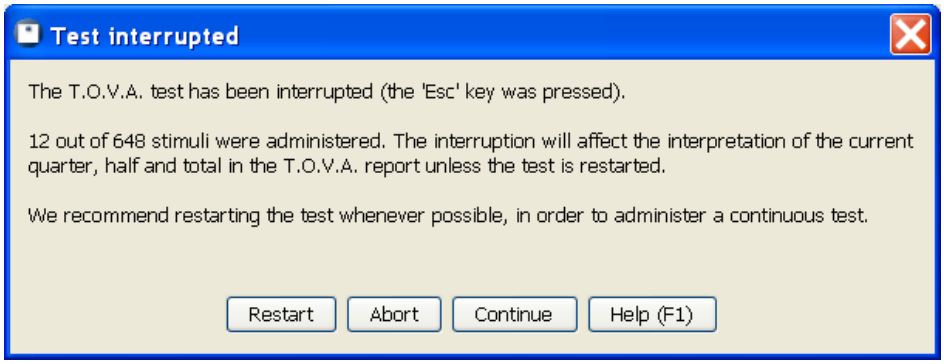

Figure 30: Aborted External A/V test

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'**, **'Restart'**, or **'Abort'** the T.O.V.A. Test. For the best results, we recommend that you restart any aborted test.

Once the T.O.V.A. Test is completed, a simple summary will appear. 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'**.

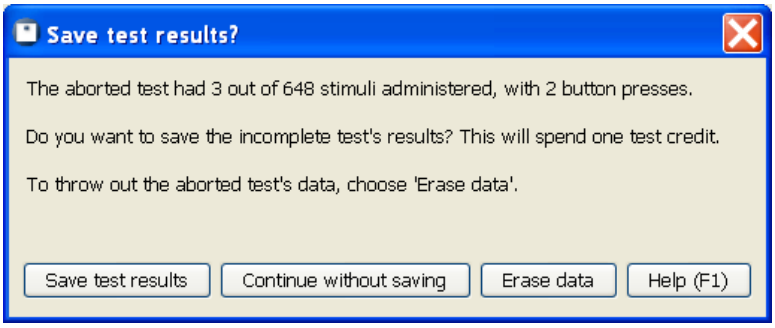

Figure 31: T.O.V.A. Test summary

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.

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 12 on page 41.

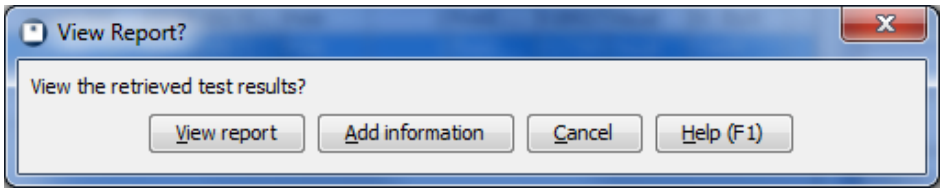

Figure 32: View the report on this T.O.V.A. data?

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 11 on page 38.

10.6 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 26.3 on page 111.
- **View the report on this data?** See section 11 on page 38.
- **Start another session for this subject?** See section 10.3.2 on page 28.
- **Start a session for a new subject?** See section 10.3.1 on page 27.
- **Modify launch defaults for future sessions?** See section 17 on page 52.
- **Get clinical support for this test session?** See section 19 on page 63.

- **Request additional test credits?** See section 12 on page 41.
- **Compare this test to other test data?** See section 26.5 on page 112

11 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 26.5 on page 112.

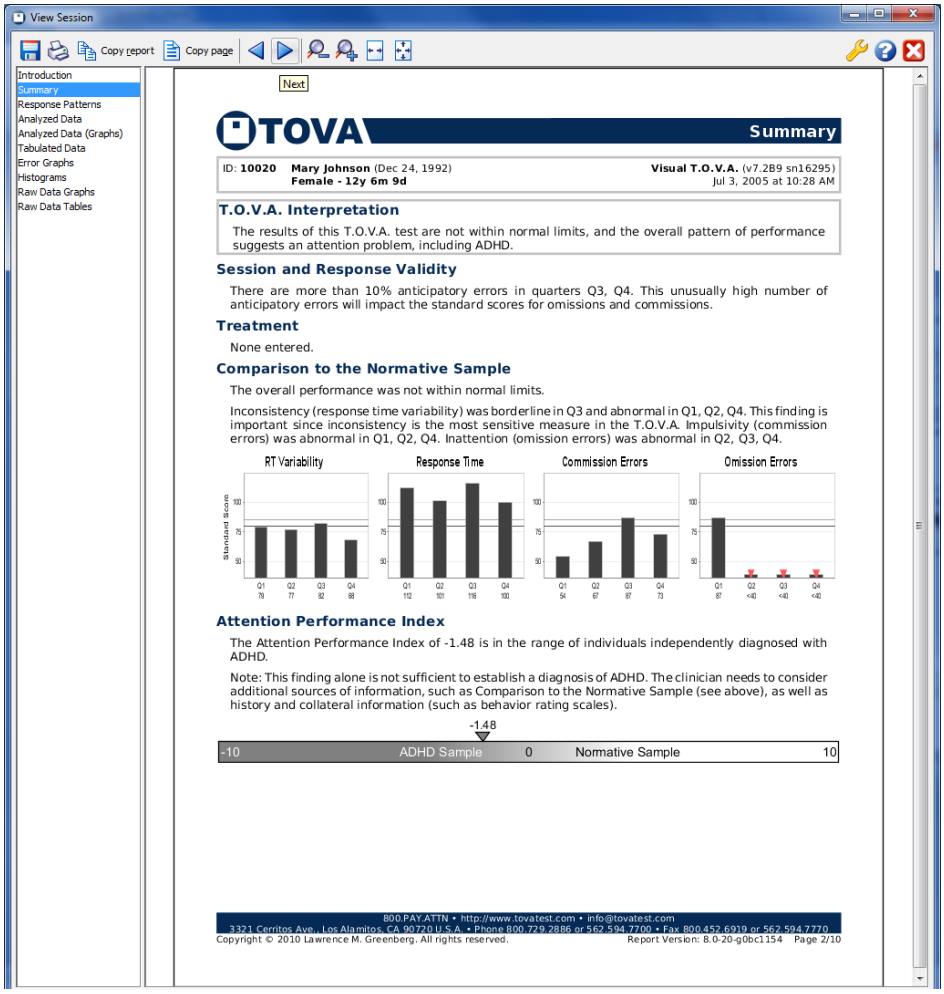

Figure 33: The T.O.V.A. Report

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 report - Copies the text of the report to your clipboard

Copy page - Copies the text of the current report page 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 11.1 on page 39 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.

11.1 Customizing the Report

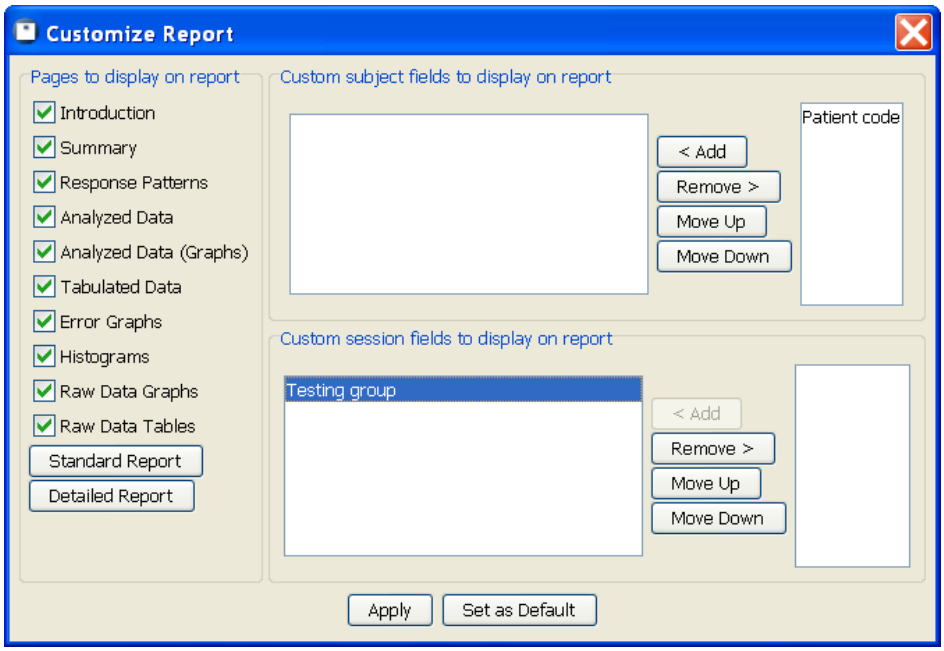

Figure 34: Select pages and fields to include

From the Report window, choose **'Customize'** to select pages to include in your report. You can select pages individually, or you can choose a **'Standard report'** or **'Detailed report'**, which automatically selects the pages we believe appropriate for each (section 11.2 on page 40).

You can also choose which custom 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.

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

11.2 Report Pages

Here's a little about each page of the report, including which pages appear in the **'Standard'** and **'Detailed'** reports, as well as which pages are available for a Screening report (section 27.4 on page 118):

Page Name	Standard	Detailed	Screening	Description
Introduction	X	X	X	The report's cover page that briefly explains what the T.O.V.A. is.
Summary	X	X	X	The overall conclusions drawn from the test results in text and graphical form.
Response Patterns	X	X		Clinical notes on the subject's performance.
Analyzed Data	X	X	X	Analysis of the subject's performance compared to the norms in a table.
Analyzed Data (Graphs)				Contains larger graphs of each of four variables as found on the Summary page (like the graphs in the T.O.V.A. 7).
Tabulated Data	X	X	X	Tabulated raw data for each quarter, half, and total, as well as session and test parameters.
Error Graphs		X		Graphically presents subject's commissions, omissions, and anticipatory errors over the course of the test.
Histograms		X		Intended for researchers and advanced T.O.V.A. users interested in response time histograms.
Raw Data Graphs	X	X		Graphically displays the subject's trial-by-trial responses.
Raw Data Tables				Table of the subject's trial-by-trial responses.

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

For more information, see the **Clinical manual** (in the Help window, section 26.6.3 on page 114).

11.3 Pasting content into Word

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'**.

12 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.

Note: If you have questions about how T.O.V.A. 8 test credits differ from T.O.V.A. 7 interpretation credits, see section 3.2 on page 7.

12.1 Ordering Credits

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.

From the main window, choose the **'Credits'** button. On the top line of the window will be shown the number of credits remaining on the attached T.O.V.A. USB device. Under **'Credits to order'** enter the number of credits you want to order and choose **'Purchase credits'**. You will be shown the number of credits to be purchased and the device for which you're purchasing them. Choose **'Purchase'** to confirm the purchase.

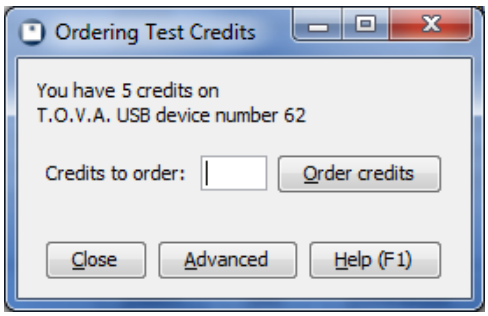

Figure 35: Ordering test credits

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 19 on page 63 for details.)

12.1.1 T.O.V.A. systems without internet

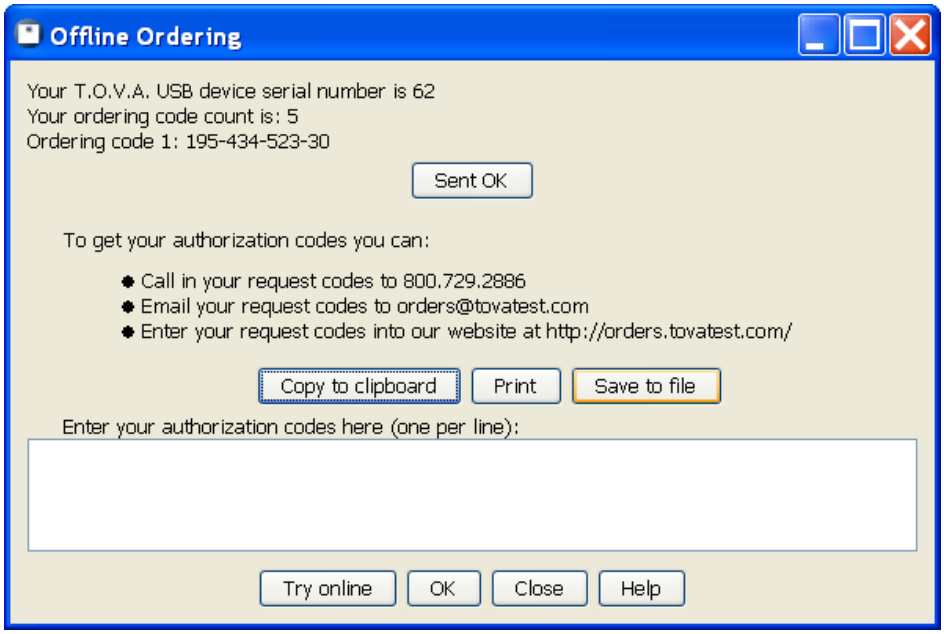

Figure 36: Offline ordering

If your T.O.V.A. system cannot connect to the internet, you will see the Offline Ordering window (Figure 36). As directed, 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'**.

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 19 on page 63 for details.)

12.2 Credits and importing

The T.O.V.A. 7 used interpretation credits, so 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.

During T.O.V.A. 8 import, T.O.V.A. 7 files that were never interpreted will be listed as "uncredited". You will need to use a T.O.V.A. 8 test credit to import each uncredited T.O.V.A. 7 file.

For more information on importing, see section 14 on page 44. For more about how T.O.V.A. 8 test credits differ from T.O.V.A. 7 interpretation credits, see section 3.2 on page 7.

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

The T.O.V.A. 8 maintains all of your subjects' test session data in a database. This makes your data easier to organize and search than storing each test session in a separate data file, as the T.O.V.A. 7 did. Regardless of your T.O.V.A. version, it's critical that you back up your T.O.V.A. data.

There are too many backup solutions for us to detail them here. What we can tell you is *what* to back up:

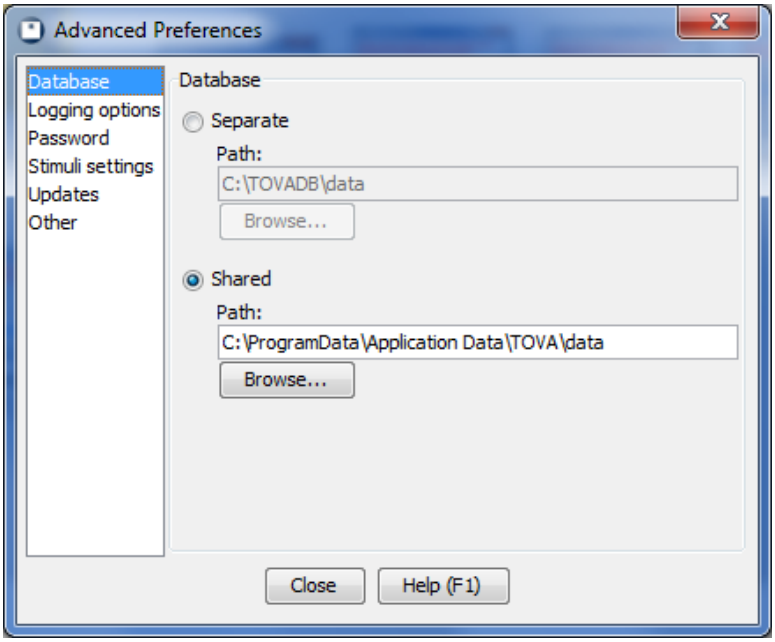

Figure 37: Database options

1. From the T.O.V.A. main window, click **'Preferences'**.
2. In the Preferences window, click **'Advanced'** and then **'Database'** (see Figure 37). Here, you will see the database type (**'Separate'** or **'Shared'**) and path.

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 user database. Therefore, you will need to back up *each* of these databases to secure your data.

This does not backup 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. At the end of your install, the Configuration wizard will run (or you can run it manually). Again, note the selected database path: that is where you will restore the data you saved.

And if you have specific questions about backing up your T.O.V.A. data, T.O.V.A. Technical Support (section 19 on page 63) is happy to help! Please call us *before* you lose your data.

14 Importing

The T.O.V.A. 8 can import T.O.V.A. 7 data files, as well as T.O.V.A. 8 files exported from other databases (See **Exporting**, section 15 on page 49). 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 38). 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'**.

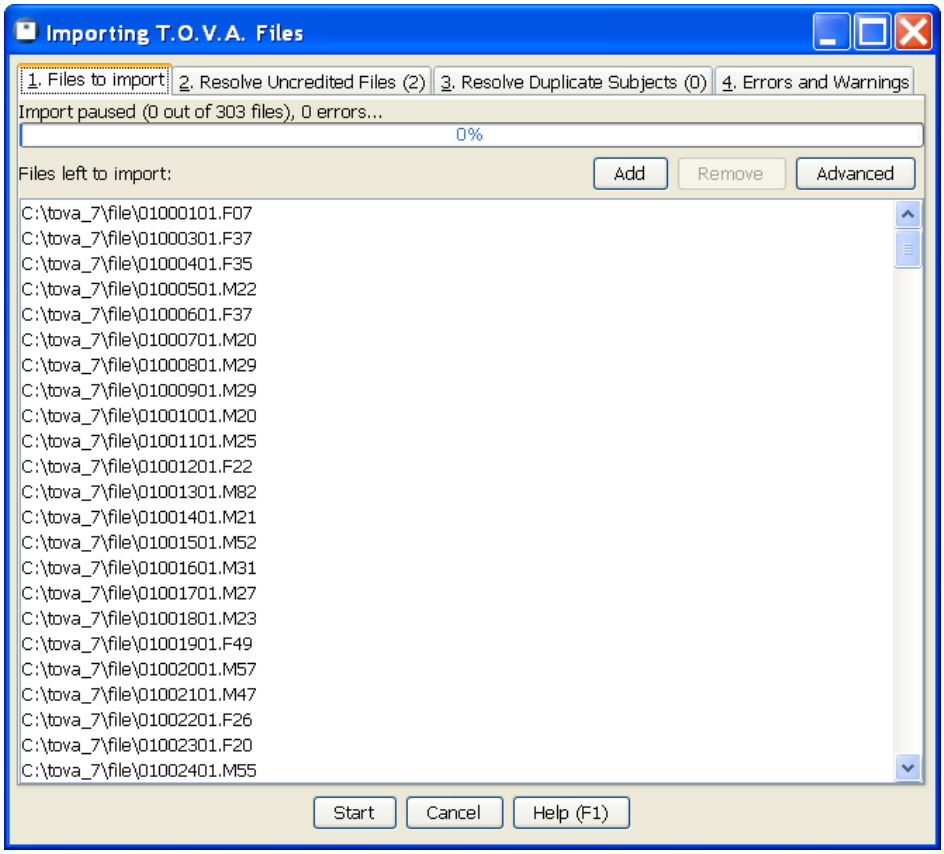

Figure 38: Files to Import tab

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.

14.1 Files to Import

This is the first tab (Figure 38), 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.

14.1.1 Advanced

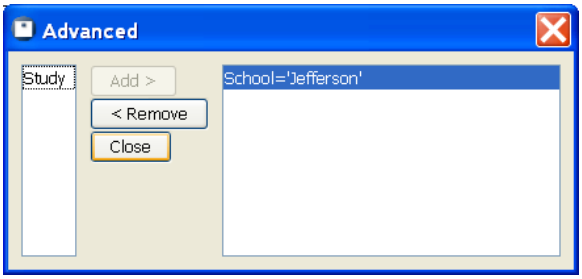

Figure 39: Advanced settings

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 the **'Advanced'** tab, 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', 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 17.1 on page 52.

14.2 Resolve Uncredited Files

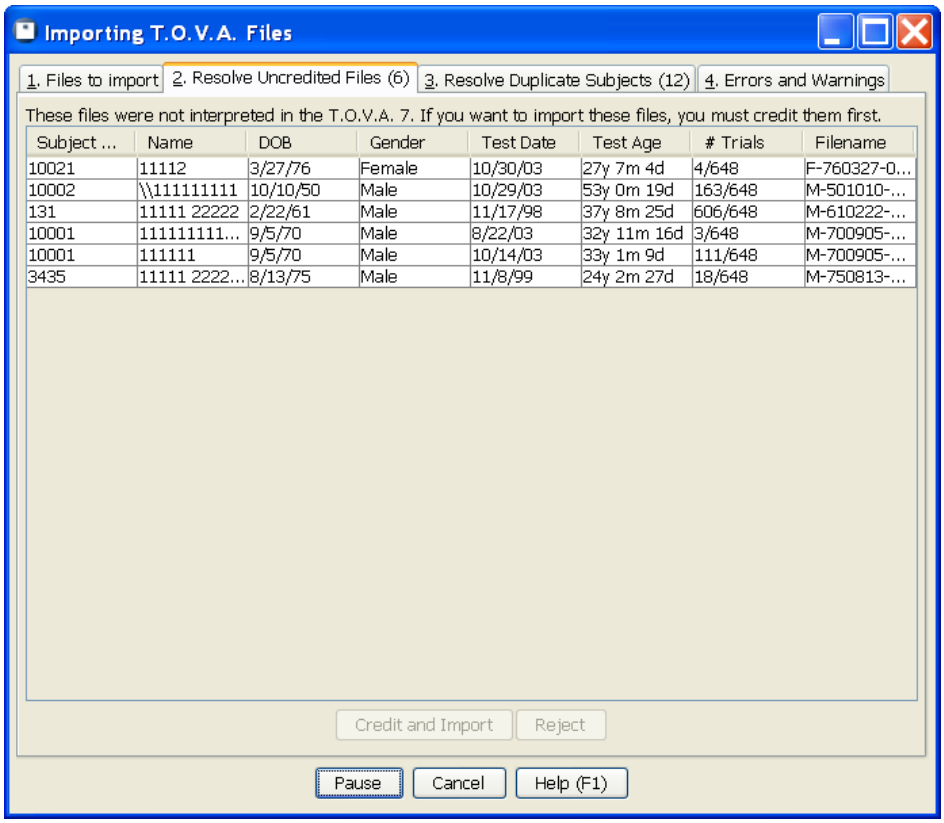

Figure 40: Resolve Uncredited Files tab

Some T.O.V.A. 7 files you choose to import may not have been interpreted. The Resolve Uncredited Files tab lists all these and gives you the chance to either credit and import them or reject them for import.

Note: Importing an uncredited file will use a 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 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. 8 file. T.O.V.A. 8 files *always* contain credited data. For more information about Exporting, see section 15 on page 49.

For more information on test credits and T.O.V.A. 7 interpretation credits, see section 12.2 on page 42.

14.3 Resolve Duplicate Subjects

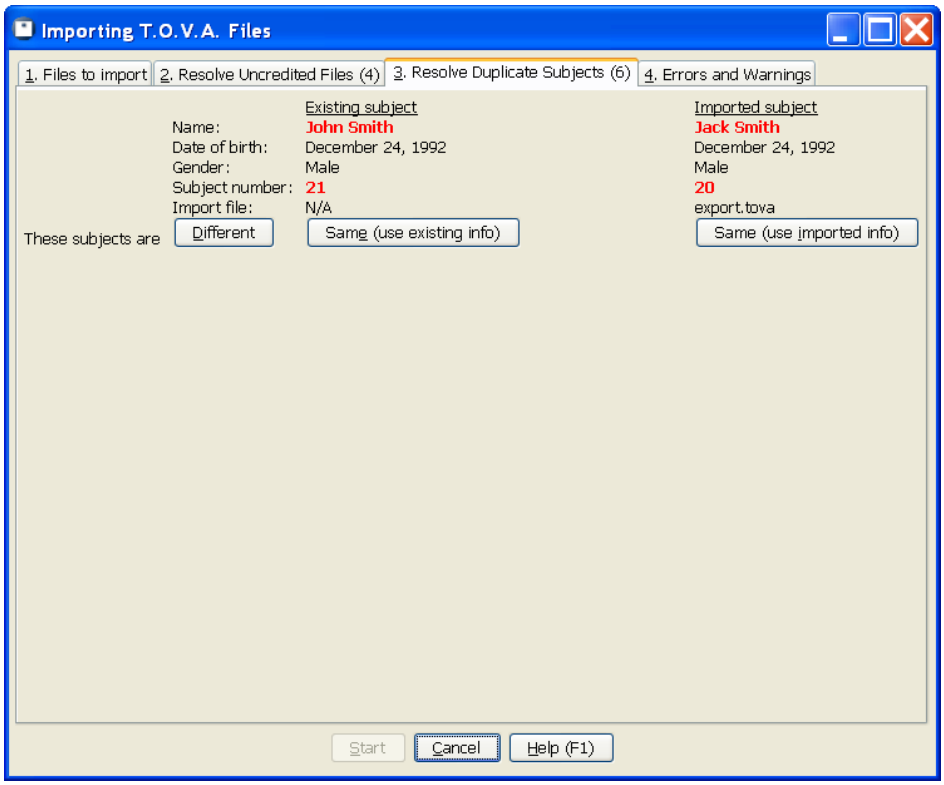

Figure 41: Resolve Duplicate Subjects tab

The T.O.V.A. 8 groups all sessions by the subject to whom they were administered. When a T.O.V.A. file is imported, we will check to see if that subject already exists in the database. Sometimes we'll find the subject and match it automatically, but sometimes the information almost, but not quite, matches up. When the import comes to one of these, it will be added to the Resolve Duplicate Subjects tab, and the tab label displays the number of potentially-matched imports.

In the example shown in Figure 41, we see that the last name and birthdate are identical, but the first name and subject number are different. Maybe there was a typo entering this subject's name. Maybe you have a subject that sometimes goes by 'John' and sometimes by 'Johnny' or 'Jack'.

This tab gives you the opportunity to decide if a subject should be matched, whether the imported subject information should replace the information in the database, or if the imported subject is a different subject entirely.

14.4 Errors and Warnings

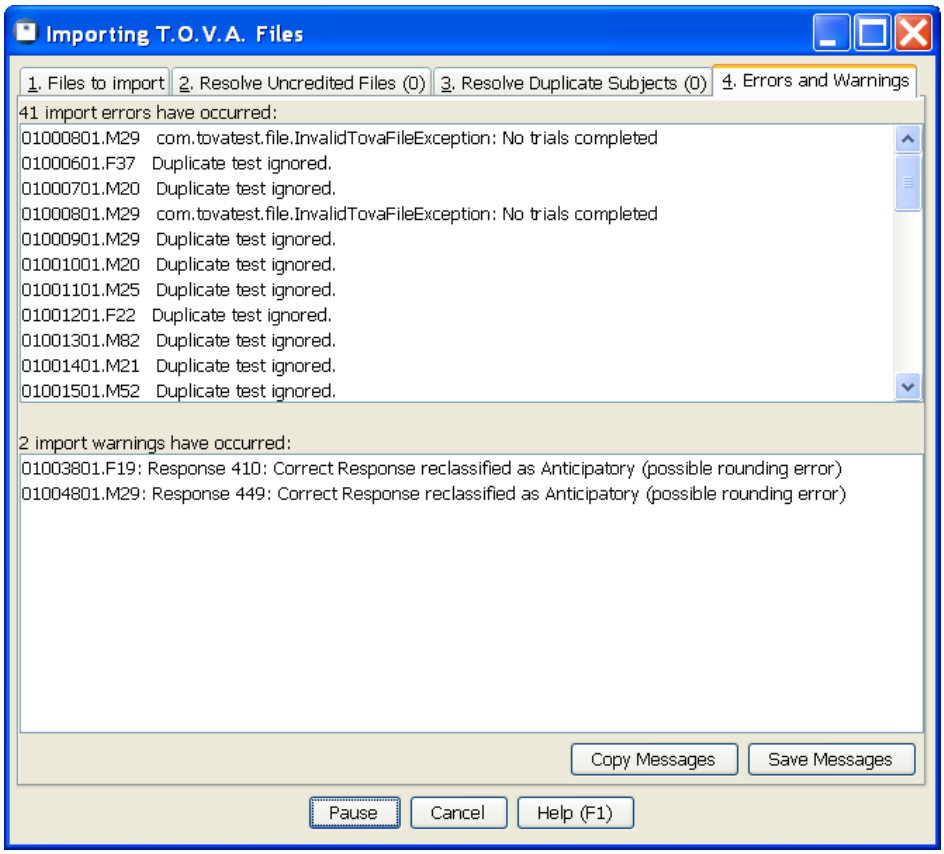

Figure 42: Errors and Warnings tab

The Errors and Warnings tab gives details on any problems that may have been encountered during import. The **'Errors'** list tells the reason for any files that have failed to import. The **'Warnings'** list shows where there may have been problems importing a file, but they were not critical, and the T.O.V.A. 8 was still able to import it. Any warnings will be added to that session's **Import Log** in the database.

Use **'Copy Messages'** to copy the information to your clipboard or **'Save Messages'** to save it out to a file.

15 Exporting T.O.V.A. data

The T.O.V.A. 8 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.

The process is simple:

1. Find and highlight the session or sessions you want to export on the main window and click the **'Export'** button.
2. Modify export options or leave them at defaults and click the **'Export'** button.
3. 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. 8 file could become large. By default, though, exports are ZIP-compressed.

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

15.1 Export options

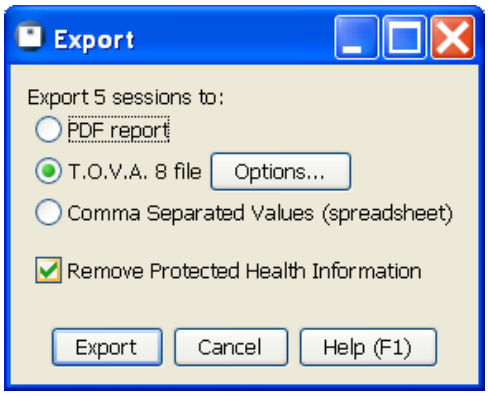

Figure 43: Export options

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

Export formats - The T.O.V.A. 8 supports three export formats:

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.

Note: You cannot import PDF reports back into the T.O.V.A. 8. Only the T.O.V.A. 8 file export can be imported.

T.O.V.A. 8 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. 8 file could then be imported (see Importing, section 14 on page 44) into a different T.O.V.A. 8 database.

The T.O.V.A. 8 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. 8 database.

Include interpretation - Along with subject/session information and raw test data, a T.O.V.A. 8 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 Clinical support.

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: This data cannot be imported into another T.O.V.A. database. Only the T.O.V.A. 8 file export can be imported.

Remove Protected Health Information - It's important to consider how to keep personal 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 17.1 on page 52.

For more information on protecting personal health information, see section 16 on page 51.

16 Protecting Health Information

The Health Insurance Portability and Accountability Act (HIPAA) has had far-reaching consequences, as we're certain you know. We've designed some features of the T.O.V.A. 8 to help you fit the T.O.V.A. 8 into your HIPAA-compliance procedures.

- Choosing **'Hide Protected Health Information'** in the Preferences (section 17.3 on page 54) will leave Subject Name and other protected fields off of the main window and reports.
- Custom fields you create can be flagged as **'Protected Health Information'**.
- Protected fields are left out of exports by default.
- Protected fields are left out of Technical and Clinical Support exports by default (section 19.4 on page 64).
- Subject names are not required. The only required individually identifiable health information is the subject's **date of birth** and **gender**. 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 has only limited built-in security. Instead, the T.O.V.A. 8 assumes that your organization has standard physical and computer security measures in place that meet HIPAA requirements. A T.O.V.A. 8 on such a computer should be protected enough for HIPAA compliance.

And as always, if you need more information, please contact T.O.V.A. Technical Support (section 19 on page 63), and we'd be happy to help you with your HIPAA needs.

17 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: If you are running the T.O.V.A. as a non-Admin user (which is likely on later versions of Windows), not all preferences will be available for you to change. If you want access to the admin preferences, you should run **'T.O.V.A. 8 Setup'** as an administrator (section 25.5 on page 102).

17.1 Custom Subject/Session fields

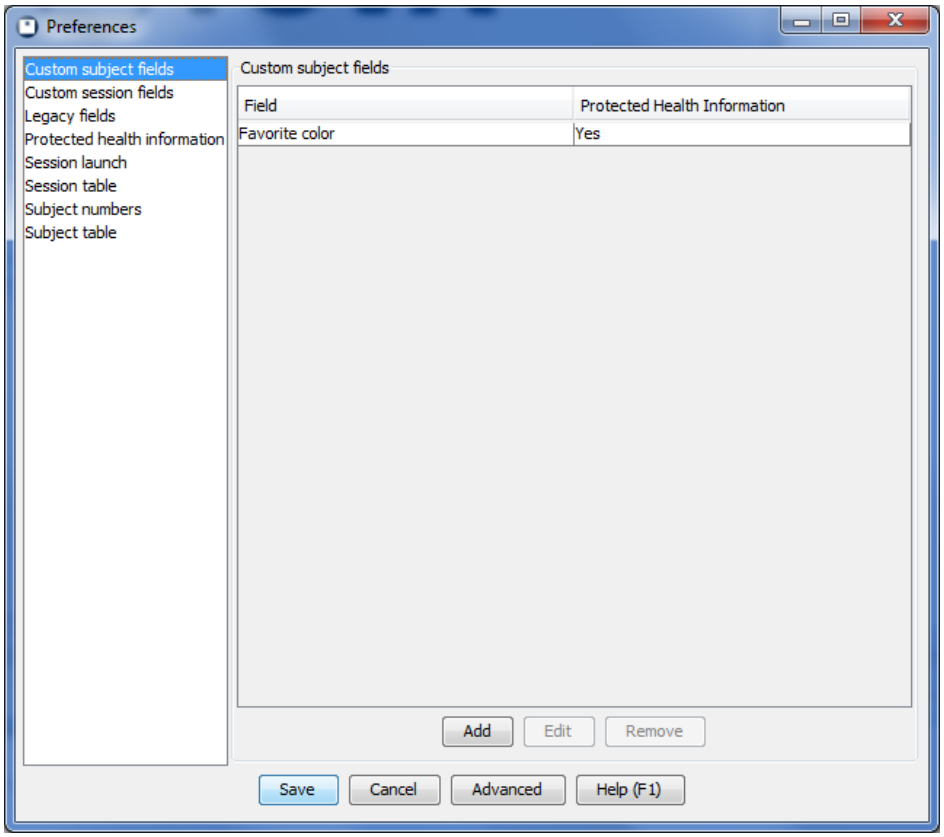

Figure 44: Custom Subject Fields

The T.O.V.A. 8 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 16 on page 51 for more information on PHI).

Note: 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.

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.

17.1.1 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 subjects/sessions browse, see **Subject/Session Table fields**, section 17.5 on page 55. To add them to the report, see **Customizing the Report**, section 11.1 on page 39.

17.2 Legacy fields

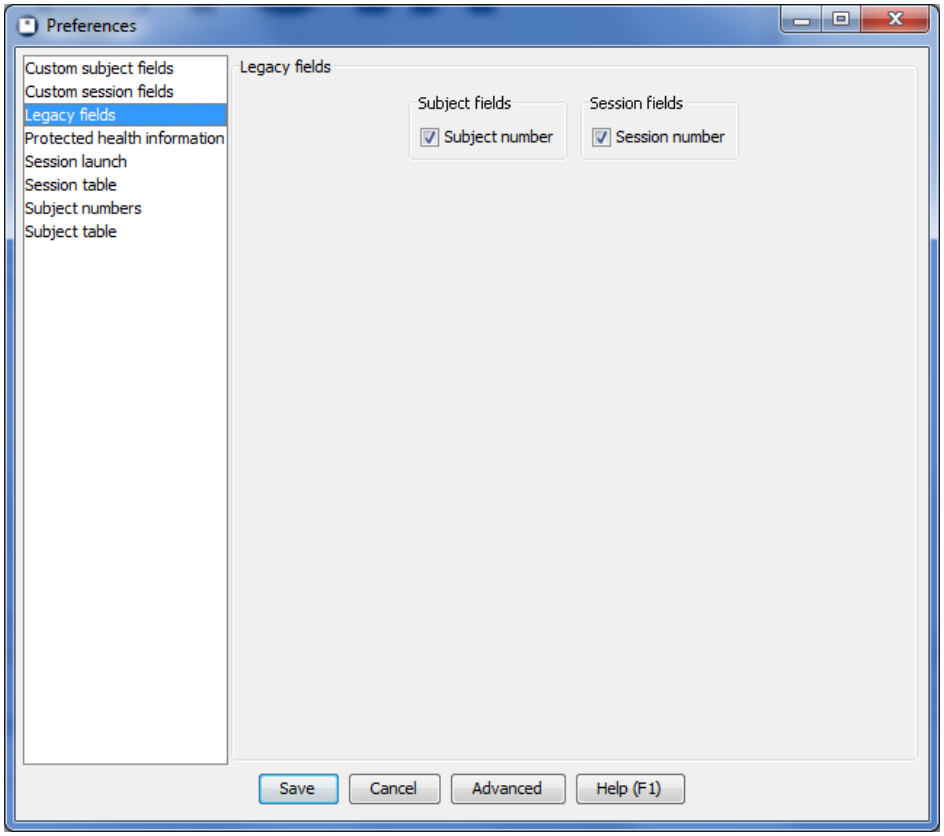

Figure 45: Legacy fields

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. When you import T.O.V.A. 7 files, 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, you should de-select

these as Legacy fields. Conversely, if your colleague shares a T.O.V.A. 8 export 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.

17.3 Protected Health Information

If you are using the main window (where you browse subject information) in view of other 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 and reports. See section 16 on page 51 for more information on protecting Personal Health Information.

17.4 Session launch

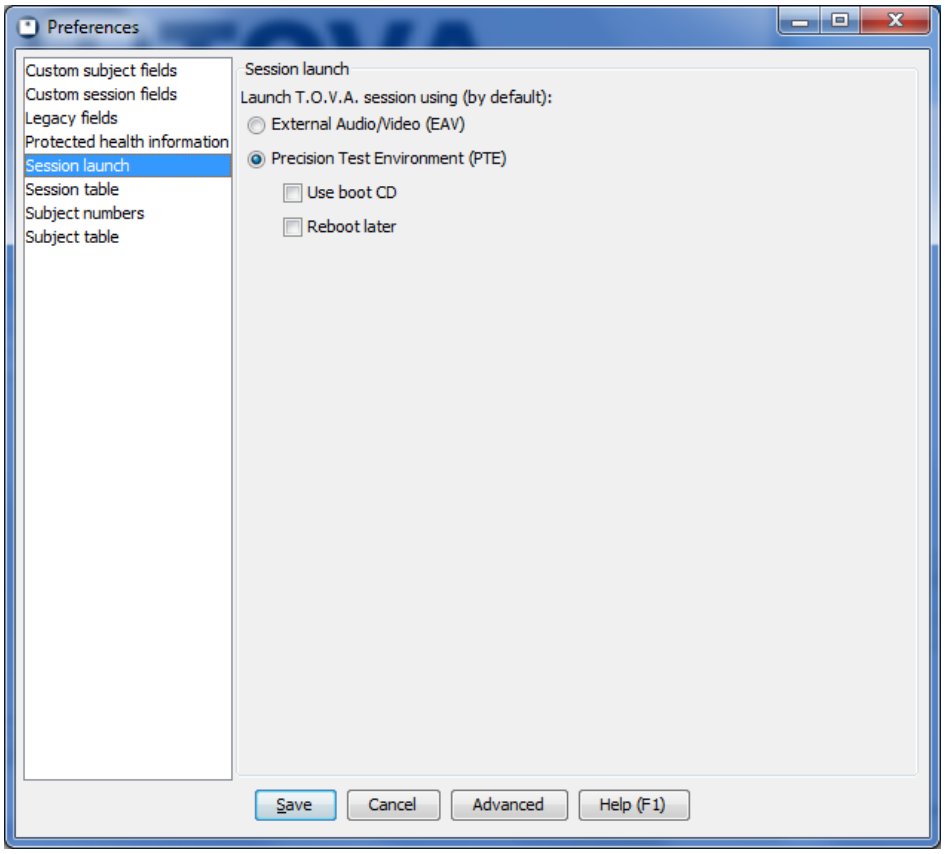

Figure 46: Session launch defaults

These are the default settings for launching a session. You may choose between EAV and PTE testing, as well as options for how to boot the PTE.

Any user may, for an individual session, select different session options. Afterward, the next session will return to these defaults.

- For more information on temporary session launch options, see section 10.4.1 on page 30.
- For more information about the PTE launch options, see section 10.4.3 on page 31.

- For more information about the EAV, see section 10.4.2 on page 30.
- For more information about the PTE, see section 24.1 on page 88.

17.5 Subject/Session Table

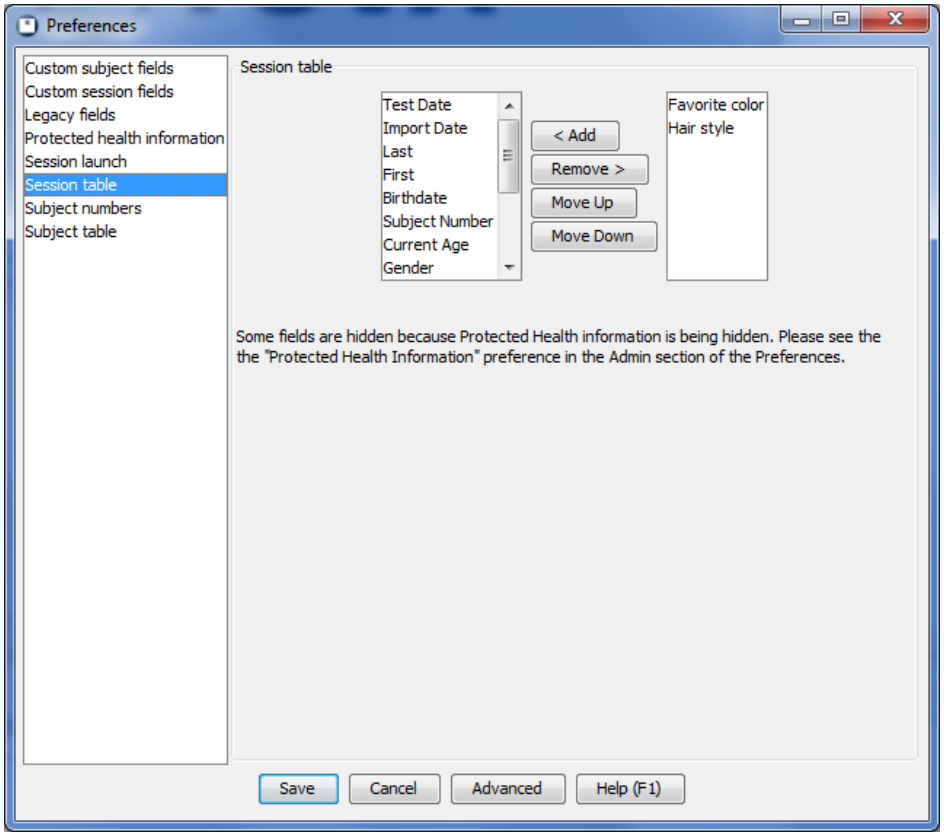

Figure 47: Session Table fields

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.

17.6 Subject numbers

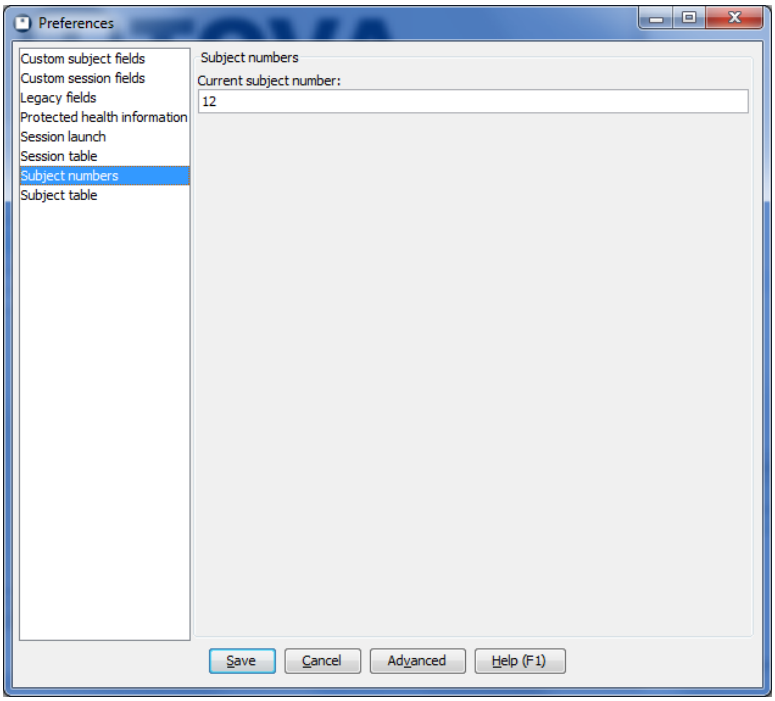

Figure 48: Subject Numbering

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 17.2 on page 53).

18 Advanced preferences

We've isolated some settings as Advanced preferences, because they are of limited use to regular users and should be approached cautiously. Choose **'Advanced'** from the Preferences to view and adjust these settings.

18.1 Database

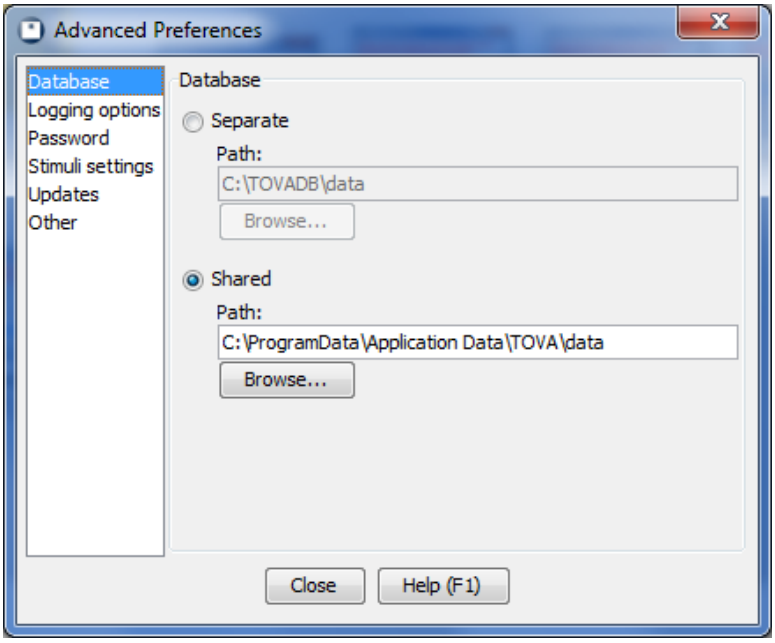

Figure 49: Database options

The T.O.V.A. 8 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 XP default path: `C:\Documents and settings\All Users\Application Data\TOVA\data`

Windows Vista/7 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 XP default path: `C:\Documents and settings\⟨username⟩\Application Data\TOVA\data`

Windows Vista/7 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

18.1.1 Notes on choosing a database path

Once you've chosen a database configuration, you can also choose a different location to store your database.

- Once you change the T.O.V.A. database path, you must **'Close'** the Advanced preferences window, click **'Save'** on the Preferences window, then **'Close'** and restart the T.O.V.A. Your changes will not take effect until you restart the T.O.V.A.
- **The T.O.V.A. 8 does not support network share databases or simultaneous access by multiple users at this time!** We can only recommend that you store your data locally on the hard drive. That said, if you want to store your Shared database at `C:\TOVADB`, or your Separate database in "My Documents", that's up to you. Click **'Browse'** to choose the path.
- Whatever path you choose, there will be a `\data` tacked onto the end. So if you browse to place your Shared database at `C:\TOVADB`, it will end up as `C:\TOVADB\data`. If you type a path into the field instead, be sure to add `\data` onto the end. That's just the way it works.
- Changing your database path **does not move your database**. If you have a database already, with session data in it, and you change to a new, empty path, a brand new database will be created at the new path. If the new path contains an existing database, the T.O.V.A. will open that database. If you want to **Move your T.O.V.A. database**, see section 25.3 on page 101.

18.2 Logging options

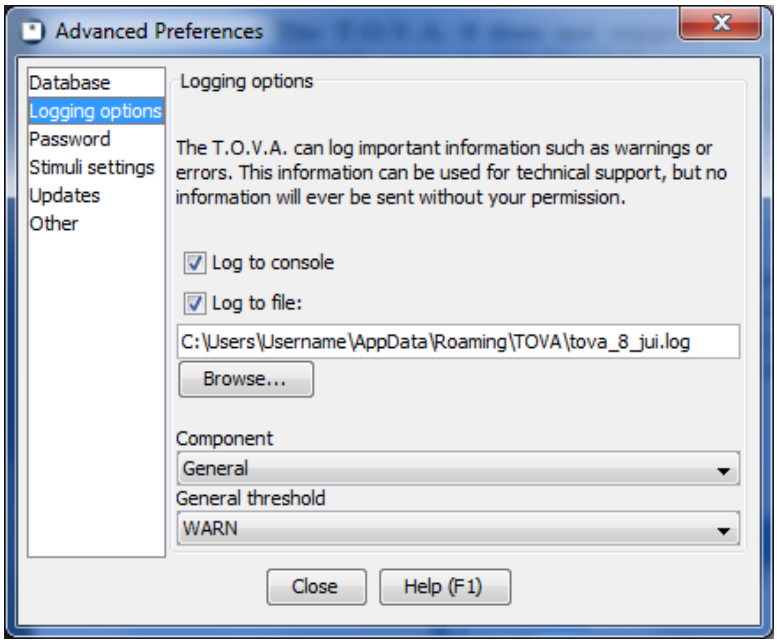

Figure 50: Logging options

Logging is a very useful tech support tool for the T.O.V.A. 8. 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 log, as well as other relevant system information, can be sent to T.O.V.A. Technical Support through our support request feature (section 19 on page 63). The TOVA Company will not collect any information from your system without your consent.

18.3 Password

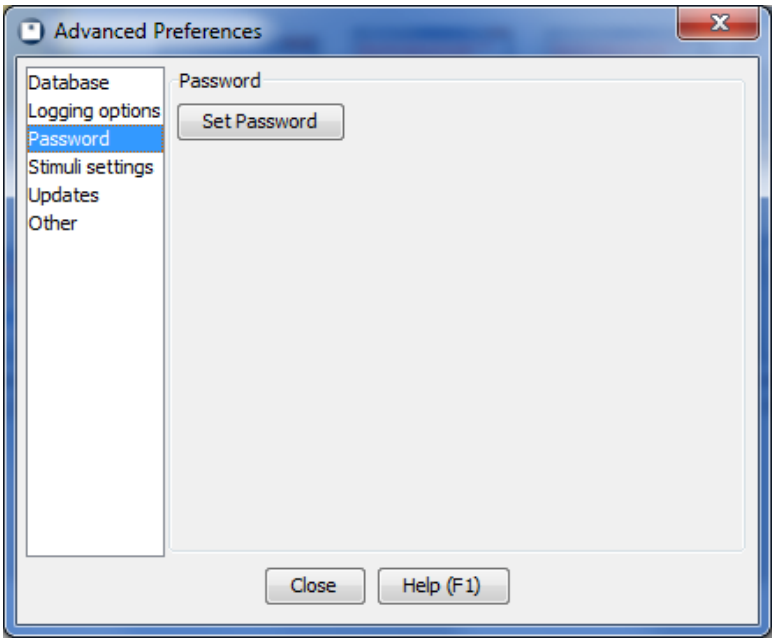

Figure 51: Setting a password

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 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.

18.4 Stimuli settings

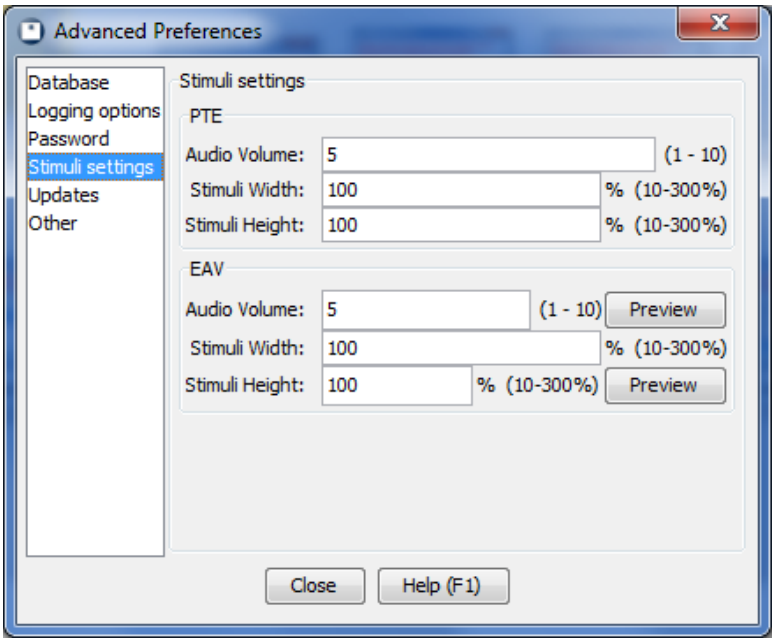

Figure 52: Stimuli settings

These are the settings the T.O.V.A. will use to size the stimuli, 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 53).

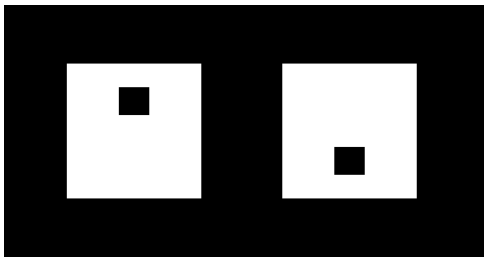

Figure 53: T.O.V.A. Stimuli, Target and Nontarget

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

- A screen size of 12 inches (measured diagonally)
- The stimuli should appear as squares, roughly 3 inches in size (measured diagonally)
- An eye-to-monitor distance of roughly 36 inches
- Presentation of the stimuli 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 T.O.V.A. 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.

18.5 Automatic Update

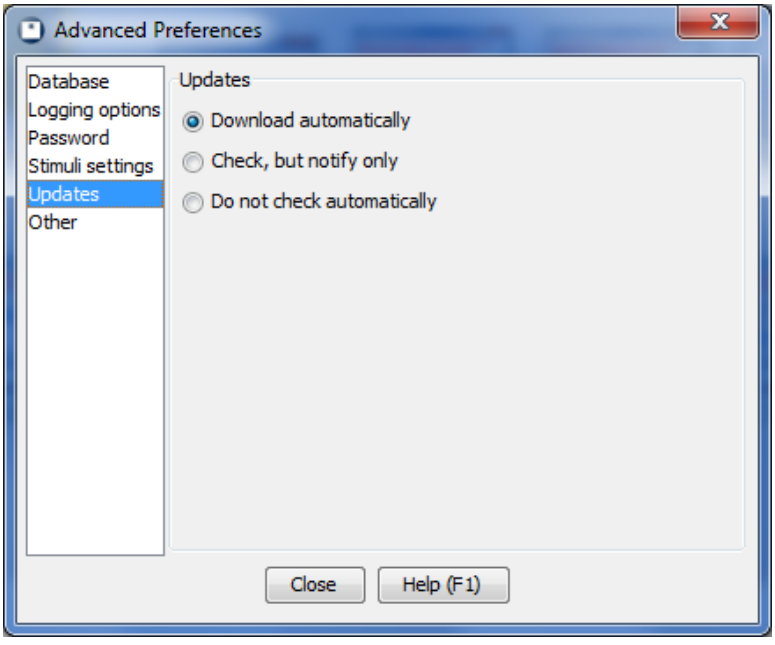

Figure 54: Automatic Update preferences

All T.O.V.A. customers are entitled to free software upgrades. Now, with the T.O.V.A. 8, we can send you updates automatically when we fix bugs or add new features. Here, you can modify your update settings.

Note: While you may or may not elect to download T.O.V.A. updates automatically, we never install an

update without asking permission.

18.6 Other settings

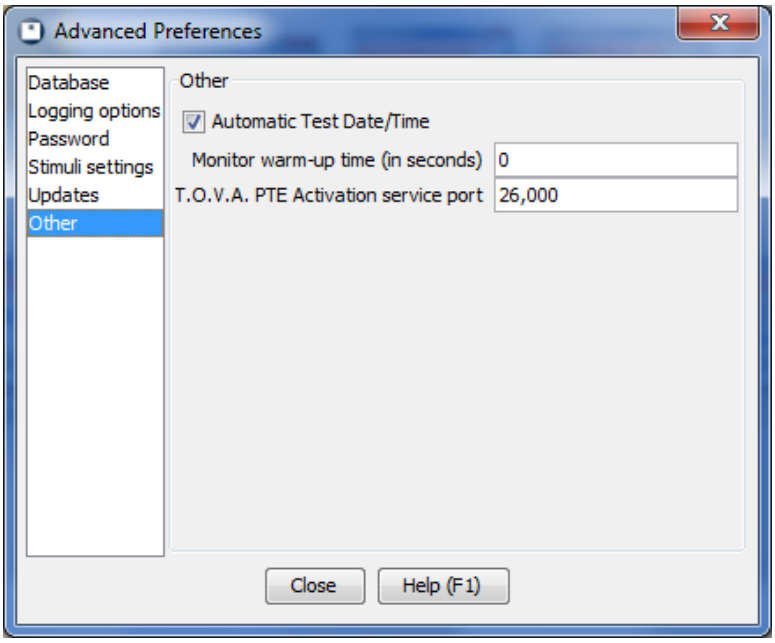

Figure 55: Other preferences

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. 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.
- **T.O.V.A. PTE Activation Service port - Please don't change this setting unless instructed by T.O.V.A. Technical Support!** Very few people will have trouble communicating with the T.O.V.A. service on this port; if you do, it can be modified here, but it must be also modified in `tova-pte-svc.ini`. See section 24.3 on page 97 for more details on the T.O.V.A. PTE Activation Service.

19 Requesting service/support

The TOVA Company is committed to helping our customers however we can to use the T.O.V.A. That's why, with the T.O.V.A. 8, you can ask for help 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.

Clinical Support - If you have questions about test results or the T.O.V.A. Report, we offer **free clinical support**. Plus, if you use the Clinical Support interface inside the T.O.V.A. application, you can send us the sessions you have questions about.

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.

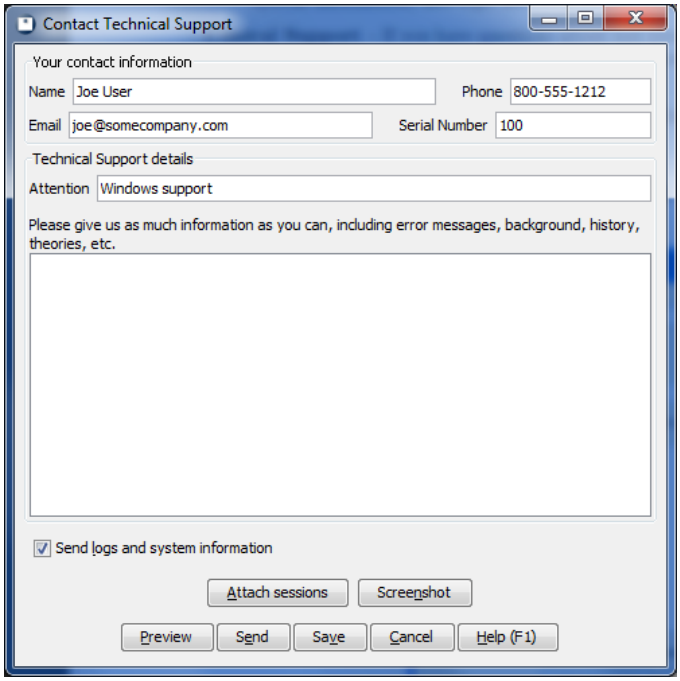

Figure 56: Contact Technical Support

In Figure 56, we see the Technical Support window. We'll use it as our example; it has the most features of the three contact operations.

19.1 Your Contact Information

These four fields tell us how to reach you with the support you require. Your **'Serial Number'** will be read automatically from your device if it's attached. Information entered into these fields will be remembered and filled in should you contact us again.

19.2 Technical Support Details

This is where you can ask your questions or give us information about technical issues. It's okay to just leave the **'Attention'** field blank, but if you're working with a specific Technical Support representative, add their name here to make sure the information goes to the right person.

19.3 Send logs and system information

This is an important one. When this is checked, 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 hardware
- The T.O.V.A. application log
- The T.O.V.A. install log *(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 or two to collect and upload. If you would prefer not to send us any of this information about your system, uncheck this box, and the request will include only the essential information: the serial number of your T.O.V.A. device, the operating system you're running on, and your T.O.V.A. software version. And contact us if you'd like to more details about the information collected.

19.4 Attach sessions

If you have questions about specific subjects or sessions in your database, you can attach them here. When you click the **'Attach sessions'** button, you will be shown a list of subjects and sessions, similar to the main window. You can select one or more subjects or sessions to attach to the support request.

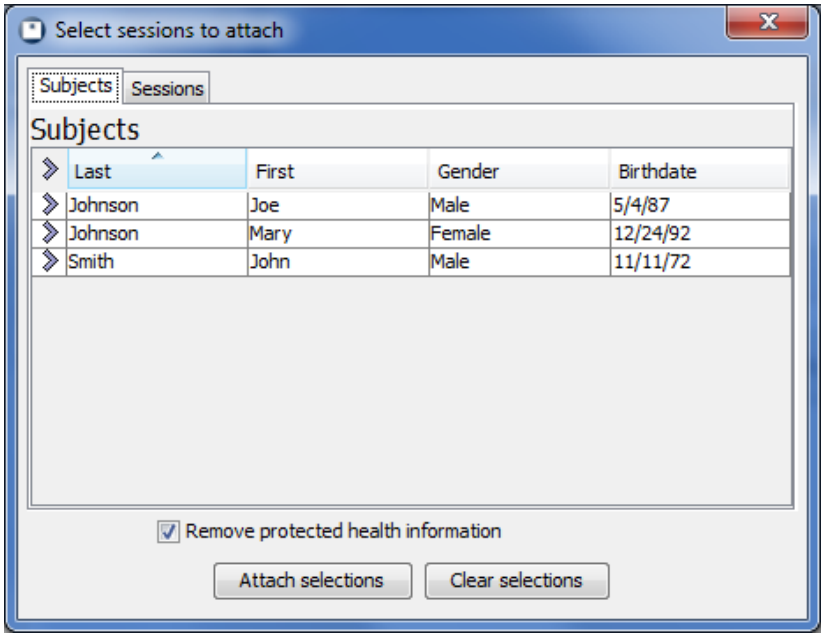

Figure 57: Send sessions with your support request

Notice the checkbox at the bottom of Figure 57, **'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 16 on page 51.

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 attached sessions.

19.5 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 58).

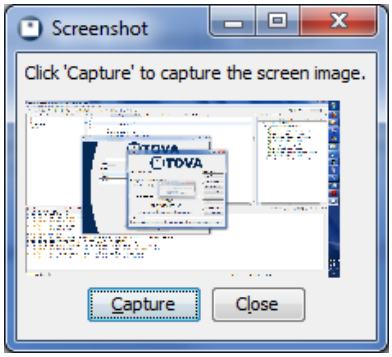

Figure 58: Use screenshot capture to show us your screen

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 looks right, **'Close'** the window; if not, arrange your windows and try another capture; if you can't tell, resize the capture window to make the captured image larger. When you're finished, the **'Screenshot'** button will have a green check, indicating your request will have the screenshot attached.

19.6 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 those curious or worried about privacy.

19.7 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, depending on your selections, so it may take a few minutes. 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.

19.8 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**.

19.9 Cancel, Help

You can guess what these buttons do.

20 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 18.5 on page 61).

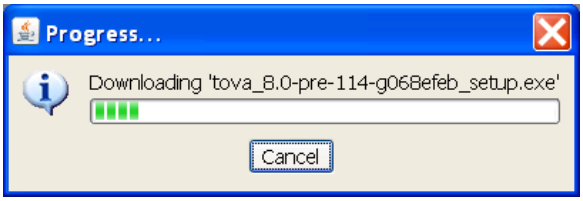

Figure 59: Downloading update

Once the download has finished, a button will appear at the bottom of the main window that enables you to install the new version. Click the button, and you're next prompted to review the release notes and accept the updated license agreement.

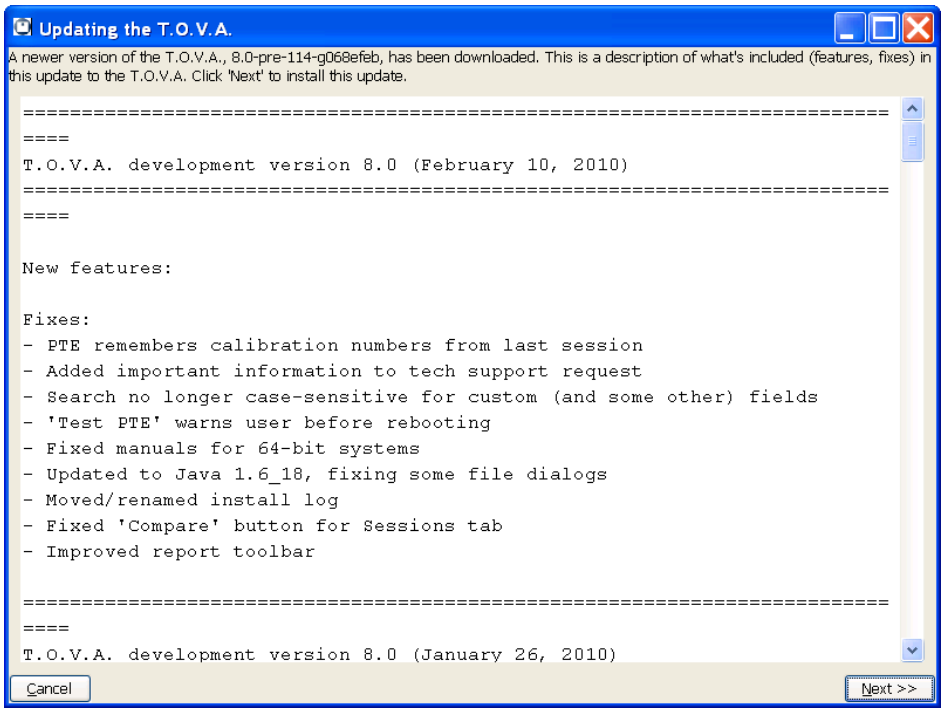

Figure 60: Review and accept the license agreement

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.

20.1 Firmware updates

Some software updates may come with an update to the firmware, the software on your T.O.V.A. hardware. Yeah, the hardware has software, too.

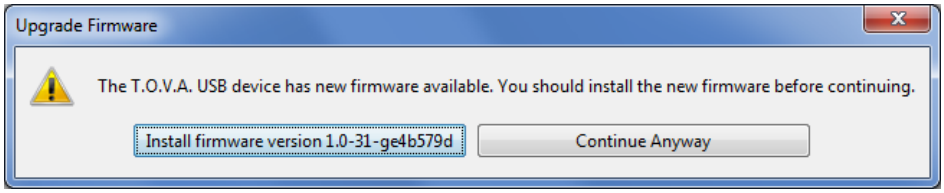

Figure 61: A new firmware update is available

When a firmware upgrade is available, the T.O.V.A. will prompt you to install it immediately (Figure 61). 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.

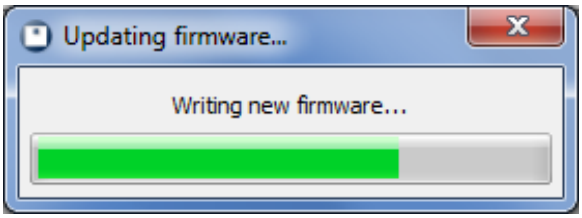

Figure 62: Updating the T.O.V.A. firmware

When the firmware update is finished, you're ready to administer more T.O.V.A. tests.

20.2 When update fails...

We try to anticipate every hardware and software configuration, but inevitably something will happen that causes the automatic update to fail.

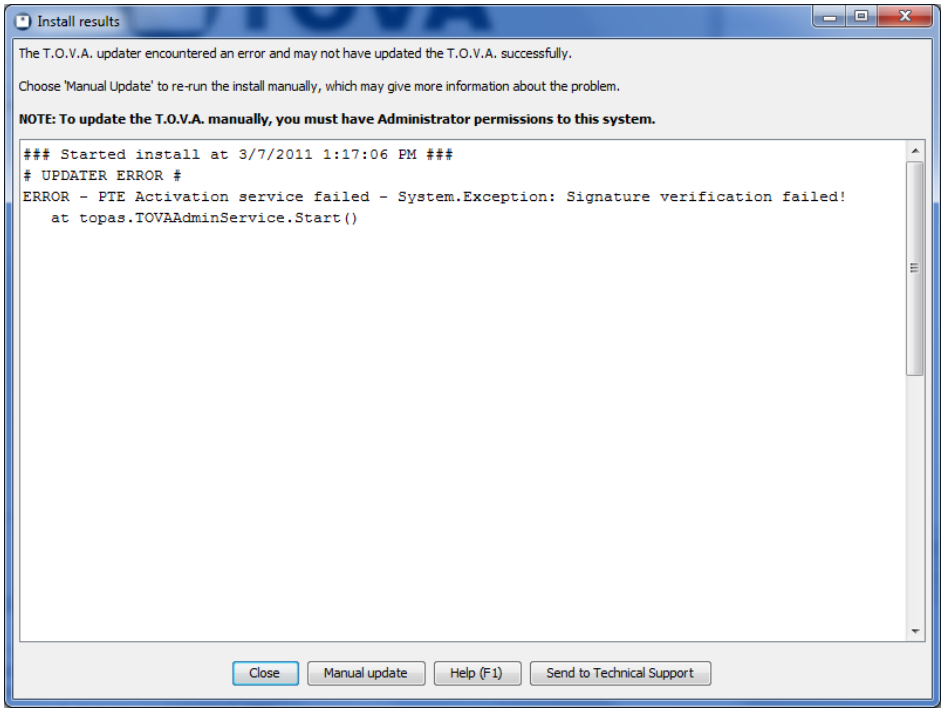

Figure 63: After an update error

When you return to the T.O.V.A., if there were install errors, the T.O.V.A. will display the install log. You can send us that log, as well as other logs that track T.O.V.A. problems, by choosing **'Send to Technical Support'**. This can help us diagnose and fix these problems for you and other users. See section 19 on page 63 for more information.

You can also click **'Manual Update'** to try manually updating the T.O.V.A. For more information, see section 25.2 on page 100.

21 Individualized Success Strategies

In the T.O.V.A. 7, there were 'Interventions'. You would check off individual activities you wanted to recommend to the subject (or a responsible adult). In this way you, as a Clinician, could intervene to help your subject.

In the T.O.V.A. 8, that has become **Individualized Success Strategies**. As in the T.O.V.A. 7, they are divided into Home and School Strategies. They are available from the Help window (section 26.6 on page 113), and when you click on each button, you will see a brief explanation of that set of Strategies. Click **'OK'**, and a report is displayed that you can print out, check off, and give out to your subjects.

That's all there is to Strategies at this time.

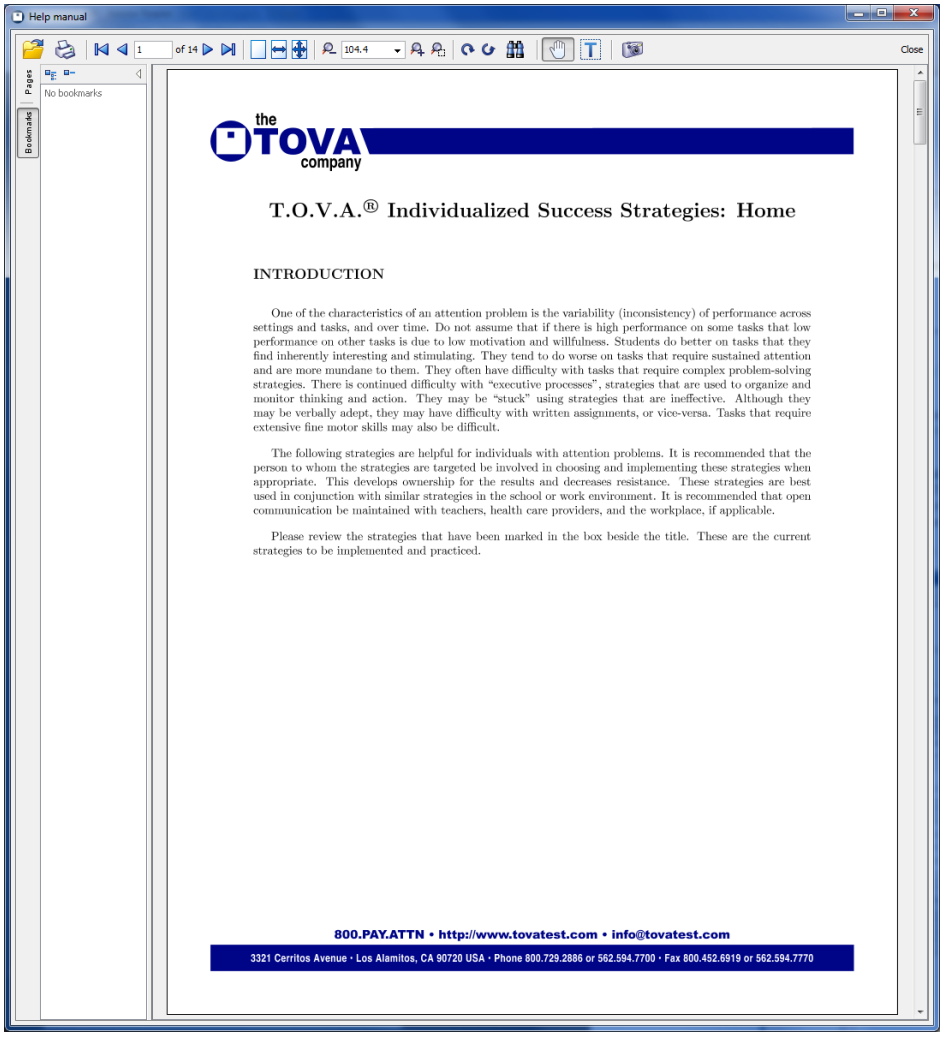

Figure 64: The Individualized Success Strategies report

Part IV

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 19 on page 63!

22 Frequently Asked Questions (FAQ)

This is where we try to anticipate and answer questions you might have about the T.O.V.A.

22.1 General Questions

How is the T.O.V.A. 8 different from the T.O.V.A. 7, and why? See section 3 on page 7

What does this term or that acronym mean? See section 28 on page 119.

How do I add my custom fields to the main window? See section 17.5 on page 55.

Why can't I connect to the PTE service? See section 24.3.1 on page 97.

Why can't the T.O.V.A. detect my USB device? See section 23.1.2 on page 75.

I hear a little static or high-pitched noise coming from my speakers. What is that? Can I stop it? See section 23.5.5 on page 87.

If the automatic update fails, how can I manually update the T.O.V.A.? See section 25.2 on page 100.

The T.O.V.A. is doing something weird. How can I send you a screenshot? See section 19.5 on page 65.

22.2 Testing

My display calibration failed. What does that error message mean? See section 23.4 on page 84.

How do I pause, go back, skip forward, turn the sound off, or skip the instructions entirely? See section 10.5.2 on page 33.

What if I can't hear the audio? See section 23.5 on page 86.

22.3 Managing T.O.V.A. data

How do I backup my T.O.V.A. data? See section 13 on page 43.

Some or all of my subjects and sessions are gone. Where did they go? See section 27.2 on page 116.

I just imported a bunch of T.O.V.A. data files. How do I find those sessions now? See section 26.2.4 on page 110.

What if I administered a test for the wrong subject? See section 25.4 on page 101.

How do I move my database? See section 25.3 on page 101.

22.4 Report

How do I add my custom fields to the report? See section 11.1 on page 39.

How do I add pages to / remove pages from the report? See section 11.1 on page 39.

How do I convert copied table data from a T.O.V.A. Report page back into a table? See section 11.3 on page 40.

How do I view a comparison report? See section 26.5 on page 112.

On the T.O.V.A. 8 report, how are the SEI, API, etc. calculated? Please see the Clinical manual, available from the **'Help'** window (section 26.6.3 on page 114).

23 Hardware

This reference section deals with the new T.O.V.A. 8 hardware, what it does, and how to diagnose hardware problems.

T.O.V.A. USB device - See section 23.1 on page 73.

T.O.V.A. Microswitch - See section 23.2 on page 80.

Check T.O.V.A. Hardware window - See section 23.3 on page 82.

Troubleshooting Display Calibration - See section 23.4 on page 84.

Audio Volume Control - See section 23.5 on page 86.

23.1 The New T.O.V.A. USB device

Perhaps the biggest change from the T.O.V.A. 7 is the T.O.V.A. USB device. In developing the T.O.V.A. 8, we knew it was important that we move away from the parallel port. Not only does the parallel port no longer appear on many new computers—some newer parallel ports won't even work with DOS!

But the T.O.V.A. USB device doesn't just replace the T.O.V.A. 7 scorebox, securely tracking your test credits. It's also a miniature computer itself! Let's look briefly at all that the T.O.V.A. USB device does when you administer a test:

Figure 65: Front of the T.O.V.A. USB device

Figure 66: Back of the T.O.V.A. USB device

1. When you launch a T.O.V.A. test, the pattern for that test is loaded onto the T.O.V.A. USB device along with the Practice Test, some limited subject and session information, and a few other settings.
2. The first time you administer a Visual test, the T.O.V.A. USB device facilitates calibration. During calibration, you hold the back of the microswitch up to your screen. The microswitch's photodiode registers the calibration flashes, and the T.O.V.A. USB device records your monitor's specific display parameters, so the T.O.V.A. test results will have the highest accuracy.
3. If you're administering an External A/V test, the T.O.V.A. USB device also supplies the test itself, sending out the Visual test video signal to your display and the Auditory test audio to your speakers. Because the EAV test timing is completely managed by the T.O.V.A. USB device, we have the capability to administer the T.O.V.A. test—with ±1 ms accuracy—without leaving your OS.
4. Every time the subject presses the microswitch button, that button press is registered and stored on the T.O.V.A. USB device.
5. When the test is finished, the T.O.V.A. USB device returns a summary of the administered test.
6. Finally, you use a credit to retrieve the test. The test data is loaded from the device and stored in your T.O.V.A. 8 database

Note: You must have a T.O.V.A. USB device to administer tests in the T.O.V.A. 8.

23.1.1 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's also a button you can press if you ever need to reset your T.O.V.A. USB device. It's important to note, however, that the light 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 light is recessed somewhat to make obscuring it that much easier.

Figure 67: Status light/Reset 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	Video and audio are turned on.
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 II on page 10 for information on installing the T.O.V.A.

23.1.2 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.
6. Make sure that you are plugging the device into your computer and not to a separate USB hub.
7. If a USB port on the front of your computer doesn't work, try one on the back, or vice versa.
8. If your OS still won't recognize the device being attached and the light remains yellow, you may need to manually install the drivers. See section 23.1.4 on page 76

23.1.3 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.

23.1.4 Installing/Fixing the T.O.V.A. hardware drivers

Note: These instructions are for Windows.

If you encounter problems installing the T.O.V.A. USB device drivers, you may need to manually install the hardware. For instance, if the T.O.V.A. hardware was attached *before* the T.O.V.A. software was installed, you could encounter a scenario where the drivers do not install correctly. This is a Windows glitch, but fortunately it can solved:

Step 1 - Attach the T.O.V.A. USB device to your computer. If the 'Found New Hardware Wizard' appears, go to Step 5.

Step 2 - Choose **'Run'** from the Start menu (or press Window-R).

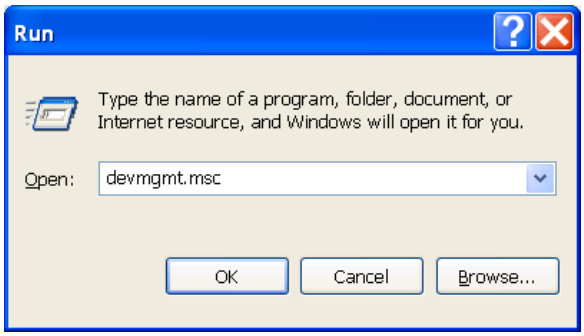

Figure 68: Run the Device Manager

Step 3 - Type `devmgmt.msc` into the **'Open'** field and choose **'OK'**.

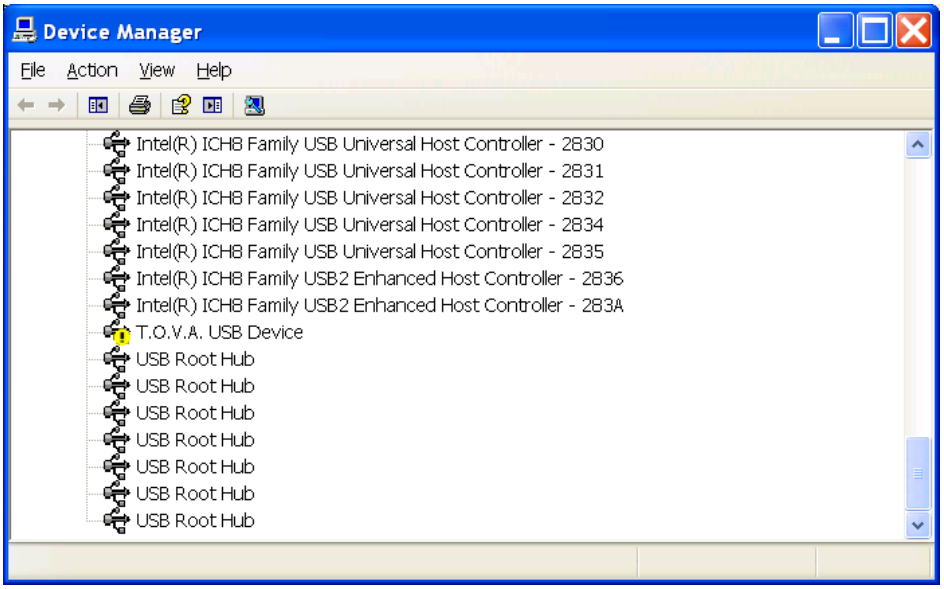

Figure 69: Missing driver in the Device Manager

Step 4 - Look for bright yellow exclamation mark beside **'T.O.V.A. USB Device'** in the hardware list. Right-click the item and choose **'Update Driver'** or **'Update Driver Software'**. This will launch the 'Found New Hardware Wizard'.

Step 5 - Choose **'Install from a list or specific location (Advanced)'** and click **'Next'**.

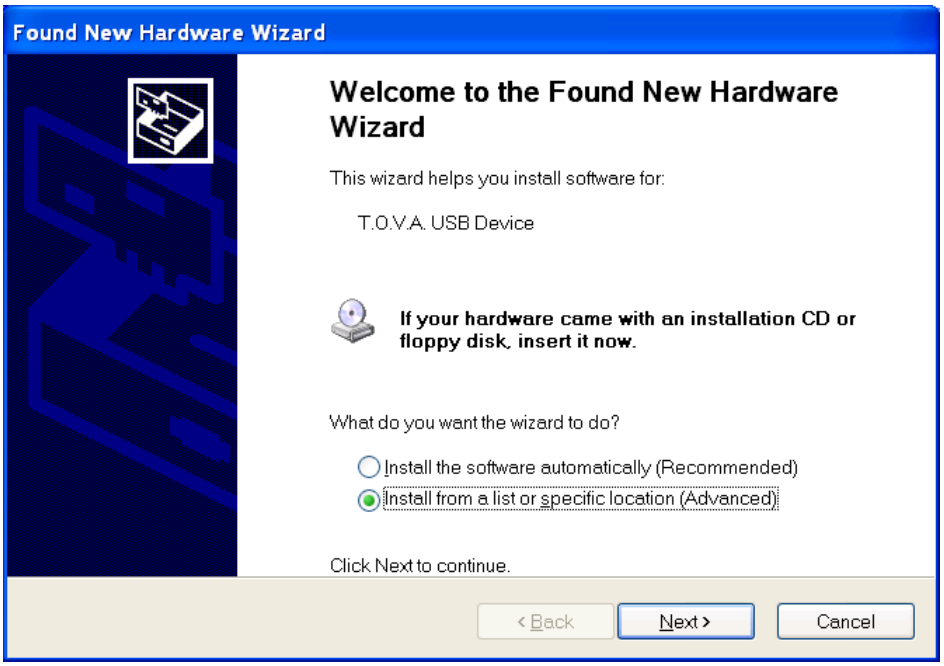

Figure 70: Found New Hardware Wizard

Step 6 - Choose **'Search for the best driver in these locations.'**

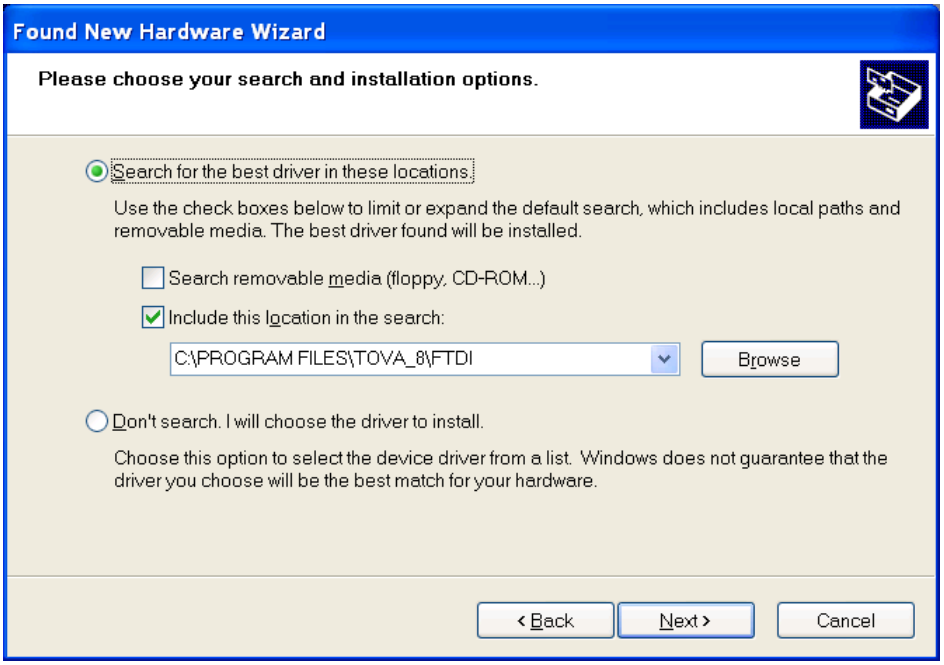

Figure 71: Direct the wizard to the T.O.V.A. drivers

Step 7 - Uncheck **'Search removable media (floppy, CD-ROM...)'**.

Step 8 - Check **'Include this location in the search:'**, browse to the T.O.V.A. install folder (by default, this will be `C:\Program Files\tova_8`), select the `ftdi` folder, and choose **'OK'**. Click **'Next'**.

Step 9 - Wait a few moments while the hardware wizard searches for and installs the correct driver.

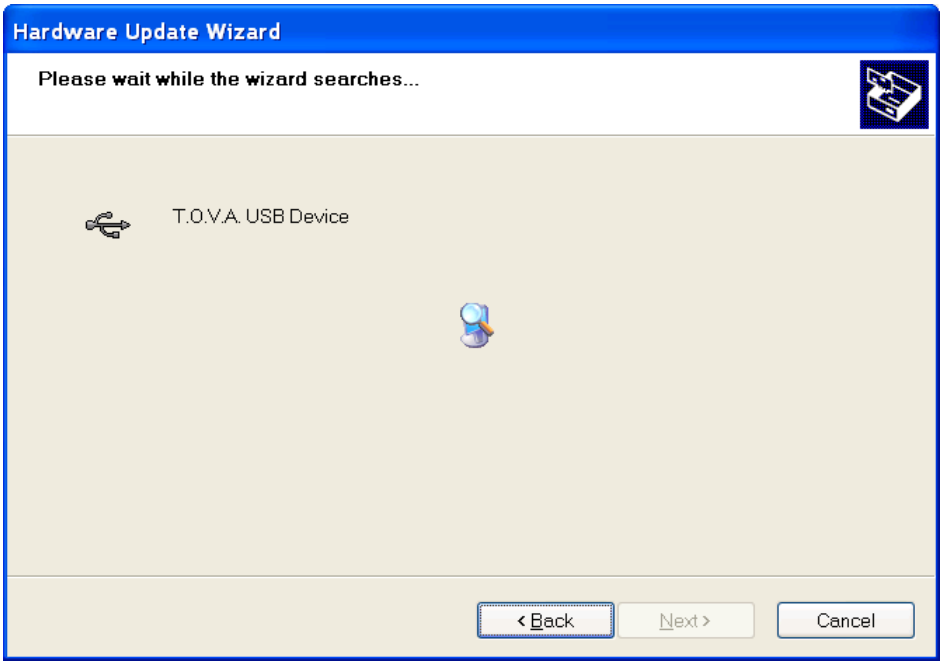

Figure 72: Searching for and installing the drivers

Step 10 - When it's finished, you should see something like Figure 73, indicating that the T.O.V.A. drivers

were successfully installed. If not, try repeating these instructions or contact T.O.V.A. Technical Support for assistance.

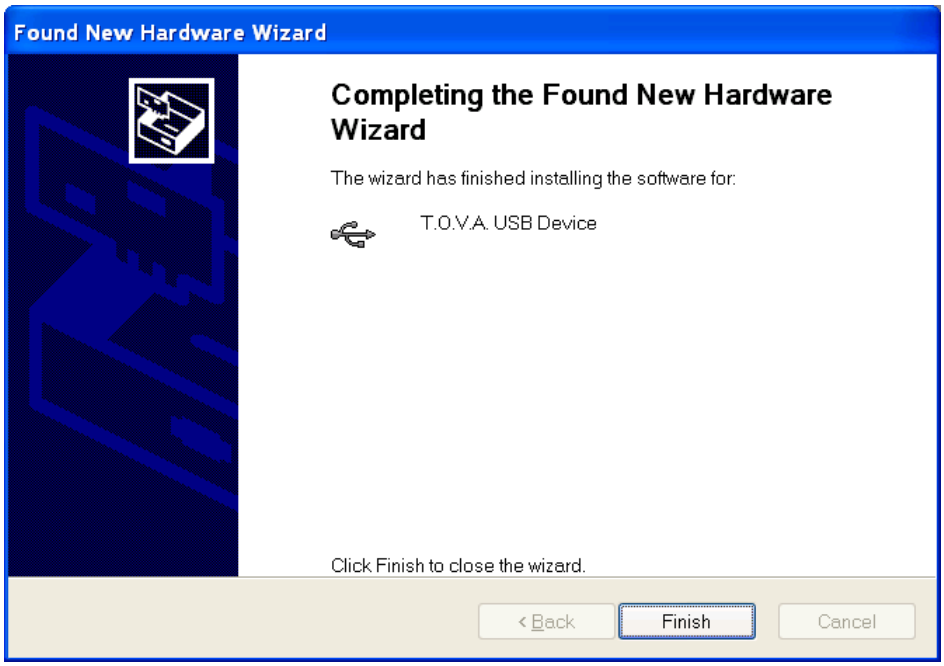

Figure 73: T.O.V.A. drivers installed!

Congratulations! You've successfully fixed a driver installation problem.

23.2 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 across literally millions of presses. The new T.O.V.A. 8 microswitch is very similar to the T.O.V.A. 7 microswitch, but with a new feature: a built-in light sensor that we use to calibrate your display. For more information on calibration, see section 10.5.1 on page 32.

Figure 74: Connector

Figure 75: 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.

23.2.1 Why isn't my microswitch working?

First, make sure that the microswitch is plugged into the front of the T.O.V.A. USB device. If it's not, or there's another microswitch error, the light on the front of the T.O.V.A. USB device may be red.

Second, 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, you're going to need a new microswitch.

Third, 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 23.3 on page 82 for more information.

Finally, if the microswitch intermittently works and then doesn't, it should be replaced **IMMEDIATELY**; a test taken with a faulty microswitch can't be considered reliable.

If you need a new microswitch, contact Customer Service (section 19 on page 63) as soon as possible and let us know how fast you need a new one. We'll send you a new one right away! **Note:** We might ask you to send us the old one for quality control purposes.

23.3 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:

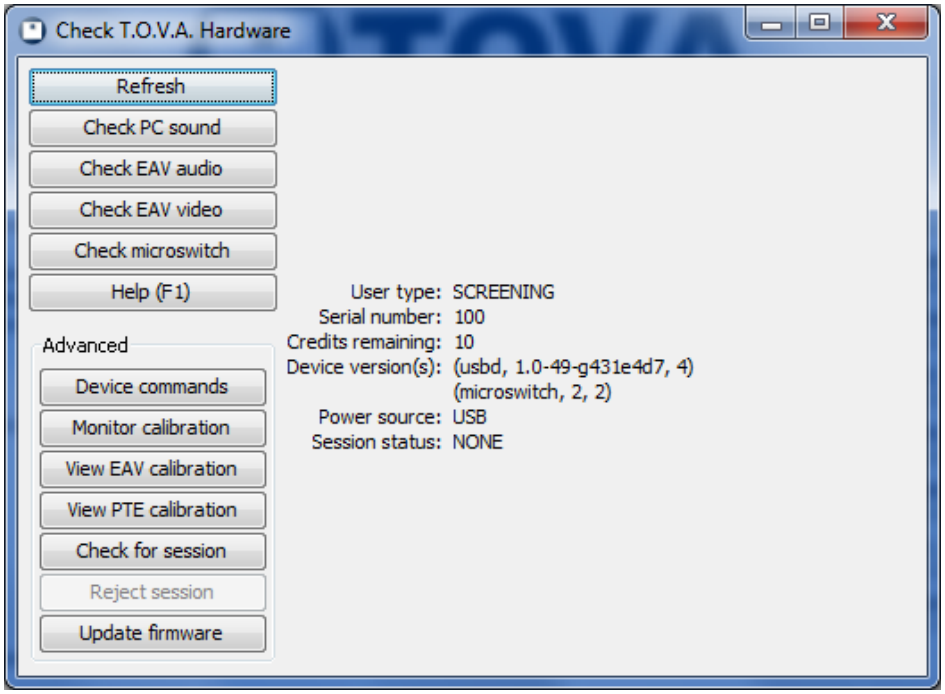

Figure 76: Check T.O.V.A. hardware window

23.3.1 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.

User type - This identifies whether you have a Clinical or Screening device. See section 27.4 on page 118 for more information.

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.

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 12 on page 41) 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 20 on page 67), you will sometimes be prompted to update this firmware as well (section 20.1 on page 68).

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 usually 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.

23.3.2 Hardware tools

Refresh - If you connect a new T.O.V.A. USB device, choose **'Refresh'** to load its information

Check PC sound - Plays a brief message through your sound card, which might be useful to be certain your system sound is working

Check EAV audio - Plays audio from the T.O.V.A. USB device to verify that the audio has been hooked up correctly

Check EAV video - Presents an image 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 23.2.1 on page 80 for more information.

Help - Opens the User's manual to this section

23.3.3 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

Monitor 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

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 without saving it, it will be lost forever.

Update firmware - Updating the firmware should happen automatically, if ever necessary, when you update the T.O.V.A. (see **Updating the T.O.V.A.** , section 20 on page 67). This option is only useful at the direction of T.O.V.A. Technical support.

23.4 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.

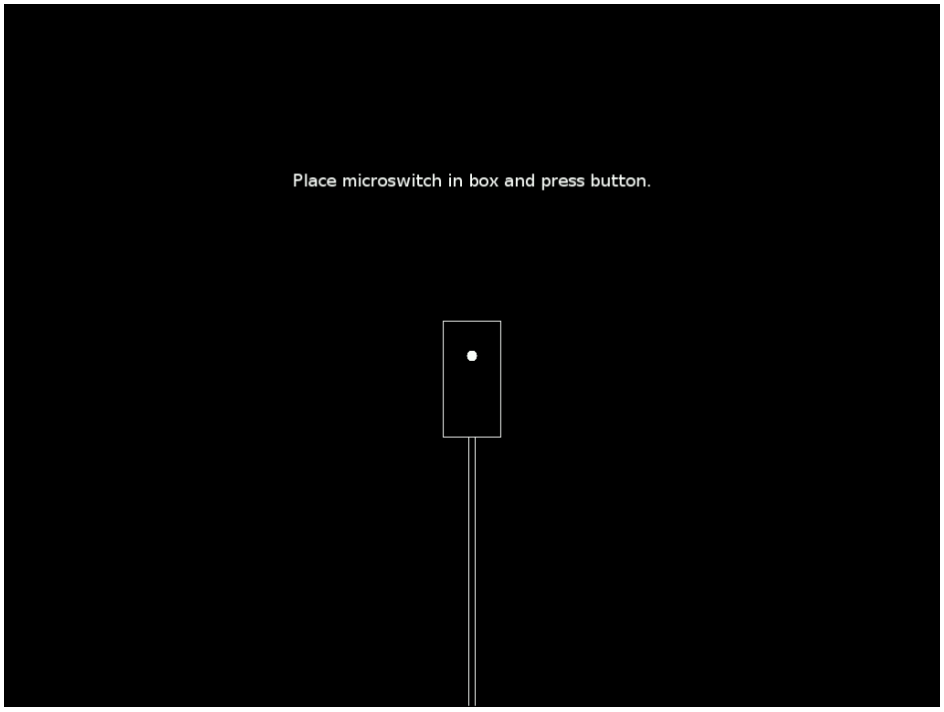

Figure 77: Hold the photodiode up to the rectangle on the screen

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 77). 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 "Push microswitch to start calibration" 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:

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

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

- 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 **??**.
- There may be too much light on the display. Direct sunlight shining on your display can sometime flood the display, and glare on the screen can interfere with testing. Make sure the front of your display does not have direct sunlight on it.

BAD_SLOPE - Your calibration results had too much drift over time.

BAD_VAR - The calibration results were too variable, and our T.O.V.A. hardware could not perceive a consistent timing pattern.

BAD_TIME - The calibration routine cannot determine if this display can be used. 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.

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 just not be capable of accurately administering the T.O.V.A. test. We do not recommend that you administer the T.O.V.A. Visual test on a display unless it can be successfully calibrated. Please contact T.O.V.A. Technical Support (see section 19 on page 63), so we can get more information about your monitor and recommend other models that will work better.

23.5 Audio Volume Control

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.

23.5.1 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 7.1 on page 20), 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? You can check your speakers in the T.O.V.A.

1. Run the T.O.V.A.
2. Go to **'Help'**, **'Check T.O.V.A. hardware'**.
3. Click **'Check PC sound'**.
4. If you hear nothing, perhaps your speakers are not hooked up or your system sound is turned off?

A Note on Speakers and the Auditory Test: If the Target (higher) tone is significantly louder than the Non-Target (lower) tone, the problem is the bass response of your speakers, and you will need to use different speakers. Contact T.O.V.A. Customer Service for recommendations.

The PTE and EAV tests each have their own volume setting. The sections to follow can tell you more about diagnosing volume problems in each testing environment.

23.5.2 Instructions audio

If it's just the test instruction audio you can't hear, press the **'S'** key while the instructions are playing to turn the audio on (or off).

23.5.3 PTE Audio

For audio problems in the PTE, use the PTE volume controls. From the main PTE session screen, press **'Ctrl'**-↑ to raise the volume one step and **'Ctrl'**-↓ to lower it. Each time a brief audio clip will be played, and a number will be displayed. Once you find a suitable volume, you should set it to that level permanently in the **Stimuli settings** (section 18.4 on page 60) under the Advanced Preferences.

Note: Volume control is only available from the main PTE screen and not during the Auditory test or the Test Instructions.

If your sound works fine in your OS and you still can't hear the PTE, even when it's turned all the way up, your audio hardware may be incompatible with the PTE. Please contact T.O.V.A. Tech Support immediately—we are doing our best to make the T.O.V.A. PTE work for every sound card, and information from your system can help us do that.

23.5.4 EAV Audio

Note: The External A/V test requires external speakers plugged into your T.O.V.A. USB device. If you have a laptop with no external speakers, for instance, you cannot run the External A/V test.

Fixing your audio for the External A/V test can be a little more complicated. That's because you have your speakers' volume, the T.O.V.A. USB device's volume, and your OS's volume (which may have more than one control). 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'**.
3. Click **'Check PC sound'** and note the volume of the audio that plays.
4. Click **'Check EAV audio'** 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 the PC 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.
7. If the EAV audio is too loud, you can adjust it under Advanced Preferences.
   (a) From the main window, click on **'Preferences'**, **'Advanced'**, **'Stimuli settings'**.
   (b) Adjust **'Audio volume'** under **'EAV'**. Then click the **'Preview'** button to check your setting.
   (c) Once the volume is to your liking, click **'Close'** and **'Save'**.

23.5.5 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 PC. 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 PC sound is cut off. If you find that it does not, try different speakers or contact T.O.V.A. Tech Support.

24 The Precision Test Environment (PTE)

This reference section deals with the PTE, how it works, and how to make it work for you.

24.1 The Precision Test Environment (PTE)

The PTE is a boot environment you can use to administer a T.O.V.A. test outside of the inconsistent timing of modern operating systems like Windows, Macintosh, and Linux. In the T.O.V.A. 8, the PTE has been simplified and improved.

Administering a PTE (Precision Test Environment) session requires rebooting your computer to our PTE operating system. This can be a complex, technical operation behind-the-scenes (see section 24.1.3 on page 90), but we've made it simple for you.

Note: For systems with an external monitor and speakers (usually desktop systems), the T.O.V.A. 8 can administer tests without rebooting. See section 10.4.2 on page 30 for details.

24.1.1 The PTE interface

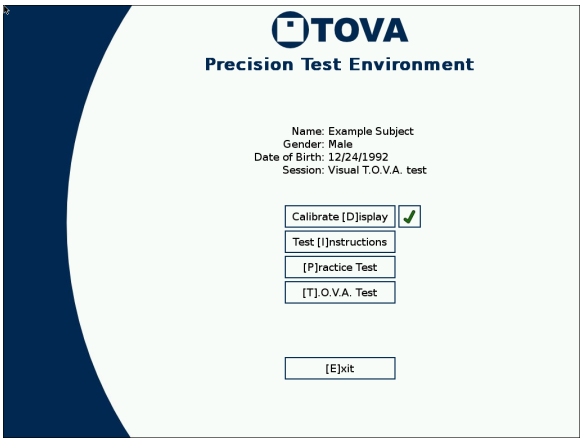

Figure 78: The Precision Test Environment

The PTE interface is very different from the T.O.V.A. 7 and is intended to basically mimic the External A/V session interface.

At the top you will see the main subject/session information. You should be sure that this is correct, or you may be administering the wrong 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.

Calibrate Display - Your first step in the PTE is to calibrate your display. You only have to calibrate one time and the data will be stored for future tests, so you can skip this step in the future, but **you must calibrate before you can administer a PTE test!** Thereafter, the T.O.V.A. will remember your PTE Calibration information, so the next time you test you won't have to re-calibrate. **Note:** If you

install a new monitor or video card, however, it's important that you recalibrate the T.O.V.A. to that new hardware.

Once calibration has completed successfully, a green check will appear next to the button. This indicates that the PTE has valid calibration data, and it should also appear automatically the next time you launch a PTE Visual Test session. If your monitor fails calibration, see section 23.4 on page 84.

Test Instructions - This will play the test instructions for your subject. See section 10.5.2 on page 33 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 they look unusual, you may want to go back and review the Test Instructions again, to make sure they 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.

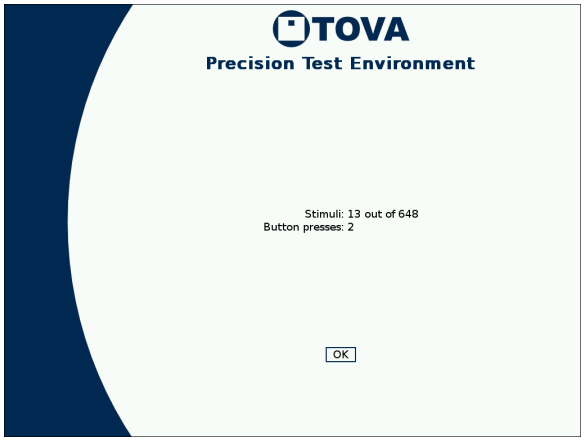

Figure 79: Results of an aborted PTE test

Done - Once you have successfully administered the T.O.V.A. Test, you should see four green checks (or three for an Auditory test, as in Figure 80). Clicking **'Done'** will return you to your OS, where you can save the test results to the database.

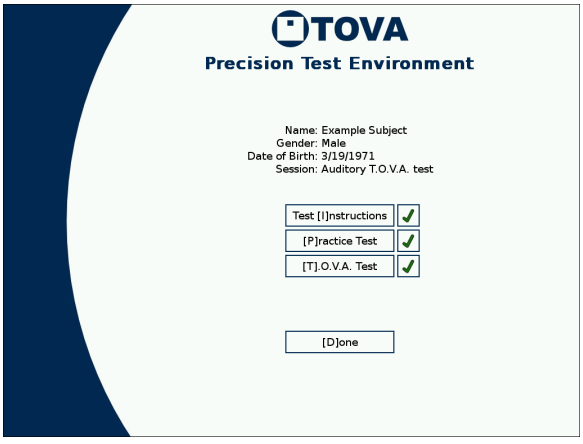

Figure 80: A successful T.O.V.A. PTE Auditory test

Special Keys

Button Keys - You can use your click on buttons to perform most functions, but you can also use your keyboard. Each button has a letter in brackets, such as [D] to calibrate your display. Press that key to activate that button, or press **'Esc'** to activate the **'Cancel'** button.

Volume Control - From the main PTE session screen, press **'Ctrl-↑'** to raise the volume one step and **'Ctrl-↓'** to lower it. Each time a brief audio clip will be played, and a number will be displayed. Once you find a suitable volume, you should set it to that level permanently in the **Stimuli settings** (section 18.4 on page 60) under the Advanced Preferences.

Note: Volume control is only available from the main PTE screen and not during the Auditory test or the Test Instructions.

PTE Logging - If your PTE has problems with your system hardware, you may be asked to generate a PTE debug log using **Ctrl-Alt-'D'**. See section 25.1 on page 99 for more information on the PTE log.

24.1.2 Testing the Precision Test Environment

To see how the PTE works or test any problems you could encounter without launching a new session, choose the **'Help'** button on the main window. Then, on the Help window, choose **'Test PTE'**. This will present you with a window of options.

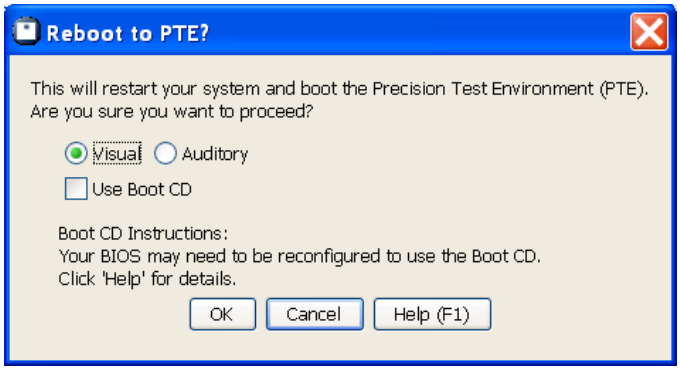

Figure 81: Test PTE options (PC)

When you choose **'OK'** your system will reboot to the PTE.

Note: Macs and some Windows systems may require using a boot CD to launch the PTE. Follow the instructions given for your system or see section 24.2 on page 91 for more assistance.

24.1.3 What is the PTE?

Note: This is a rather technical explanation, only for the geeky and curious.

The T.O.V.A. 8 Precision Test Environment PTE is a minimal Linux 2.6 system tuned for real-time response. It uses SDL, ALSA, the Speex audio codec, and other standard tools and libraries to present the T.O.V.A. test instructions and stimuli with guaranteed timing accuracy and precision, within a simplified interface.

Entering the PTE requires rebooting out of your normal operating system. If you're using the Microsoft Windows operating system, then each time you launch a PTE test session we use Grub4DOS (a universal

boot loader that's a modified version of GNU GRUB) to boot the PTE and then ensure that Windows starts again on your next boot. On Windows XP, we do this by temporarily modifying your boot.ini file and then restoring it. On Windows Vista or 7, we add the PTE boot image as a boot option; when you reboot to the PTE we send a /bootsequence command to the Boot Configuration Data store, which temporarily changes your system's boot display order, causing it to boot the PTE by default. For our MacOS X customers, and for Windows customers who can't use Grub4DOS, we provide a bootable CD as an alternative.

24.2 Using the T.O.V.A. 8 Boot CD

Your T.O.V.A. 8 CD not only allows you to install the T.O.V.A. and our fine manuals, it also acts as a boot CD. A boot CD is like the boot floppies of yesteryear; put the T.O.V.A. 8 CD in your CD (or DVD) drive, restart your computer, and then your computer boots (starts up from) the CD instead of from your hard drive.

Why would you ever need this?

- You are unable to administer an External A/V test in Windows **AND**
- Your computer has difficulty booting the PTE otherwise.

24.2.1 Using the T.O.V.A. 8 CD to Boot the PTE

1. Run the T.O.V.A.
2. Start a new session (see section 10.4 on page 29 for details).
3. At the bottom of the **'New Test Session'** window, verify that the **'Session Launch'** instructions tell you to **'Insert the boot CD'**. If not, choose **'Options'**, check the box **'Use Boot CD'**, and choose **'Close'**. To modify this setting for future sessions, change the setting in your Preferences (see section 17.4 on page 54).
4. Insert the T.O.V.A. 8 CD into the CD drive and choose **'Launch'** to restart your computer.
5. **(Mac-only:)** After the power light goes out, press and hold the **'C'** key until the CD begins to boot.

After your system restarts, you should see the T.O.V.A. 8 PTE.

If your system boots instead back to your OS, you may need to modify your system's boot order in the BIOS.

24.2.2 Modifying Boot Order in the PC BIOS

Note: This section is for PC users. Mac users should hold down **'C'** to boot the CD

If you insert the T.O.V.A. CD into your CD-ROM drive and restart your system, the system should boot to the CD, meaning that it will try to load the T.O.V.A. Precision Test Environment instead of running Windows. If it does not, however, ***don't panic!*** You probably just have a different boot configuration. We can probably change your system so that it will try to boot to the CD before the hard drive. It just means we're going to have to change your BIOS settings. Okay, you can panic now.

Just kidding. The truth is that configuring your BIOS is pretty easy. Telling you how to configure your BIOS is virtually impossible. This is because almost every system does it differently, and only some of them

give you helpful clues along the way. You may have to reboot your system two or three times before we figure it out. But we *will* figure it out.

It may help you in performing this task to imagine that you are a BIOS ninja. It sounds ridiculous, and it is. But to change your boot order, we will need to strike quickly and slip in and out without disturbing the environment, and most of all, adapt to the unexpected. That sounds like a ninja to us, but if it sounds like a platypus to you, hey, it's your imagination.

Reboot Your System: This is the easy step, because you'll always have to do this first. Unless your computer is currently off, in which case step one will be **Turn your system on** instead.

Getting to the BIOS: When you first reboot your system, you will likely see some kind of logo, and some information about your RAM or processor you probably usually ignore. You will hopefully also see something like "Press F10 to enter Setup" or "Hit DEL for BIOS". If you don't see it the first time, reboot your system and look again.

There is always a chance that there will not be any such helpful message. One of our test systems, for instance, does not. As it turns out, the key to press is **'F1'**, but we've seen quite a few others. If you have no message, try the following:

'Delete', 'Esc', 'F1', 'F2', 'F10', 'F12'

Here's where you're gonna need those ninja-like reflexes. Whichever key it turns out to be, it will need to be pressed while that initial splash screen appears, which could be as long as twenty seconds or as short as one. Furthermore, even if you press the right key, it may not immediately respond. If none of those work, and you may have to try them more than once, you might need to contact your company or organizational system support, the tech support that came with your system, or you can always try T.O.V.A. Technical Support.

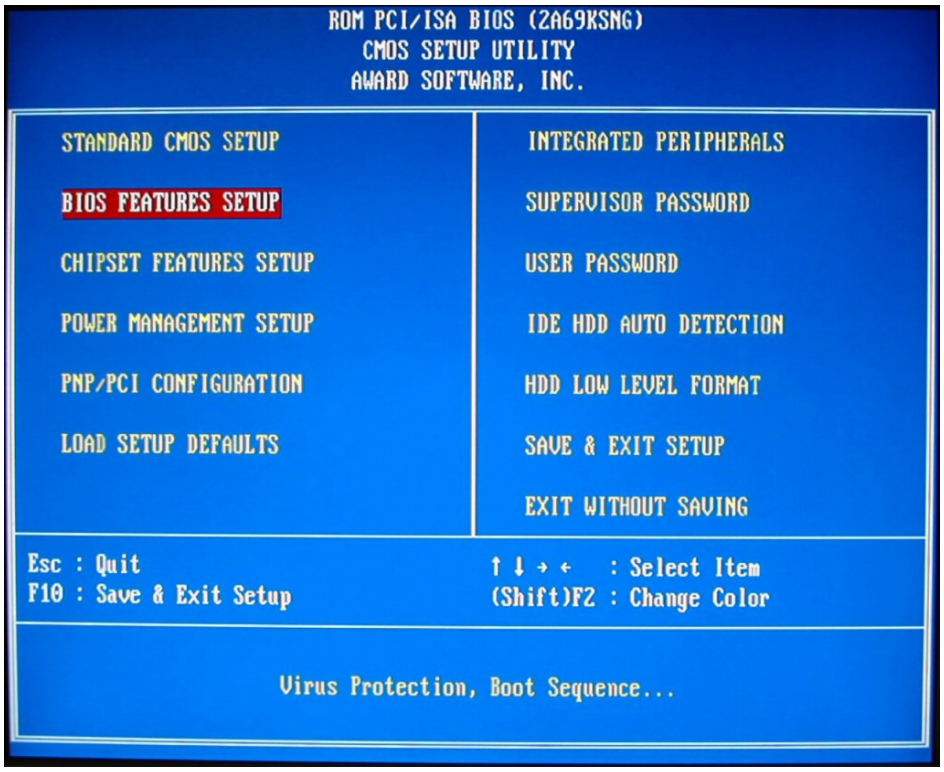

Figure 82: Award BIOS start screen, with the cursor on the correct section.

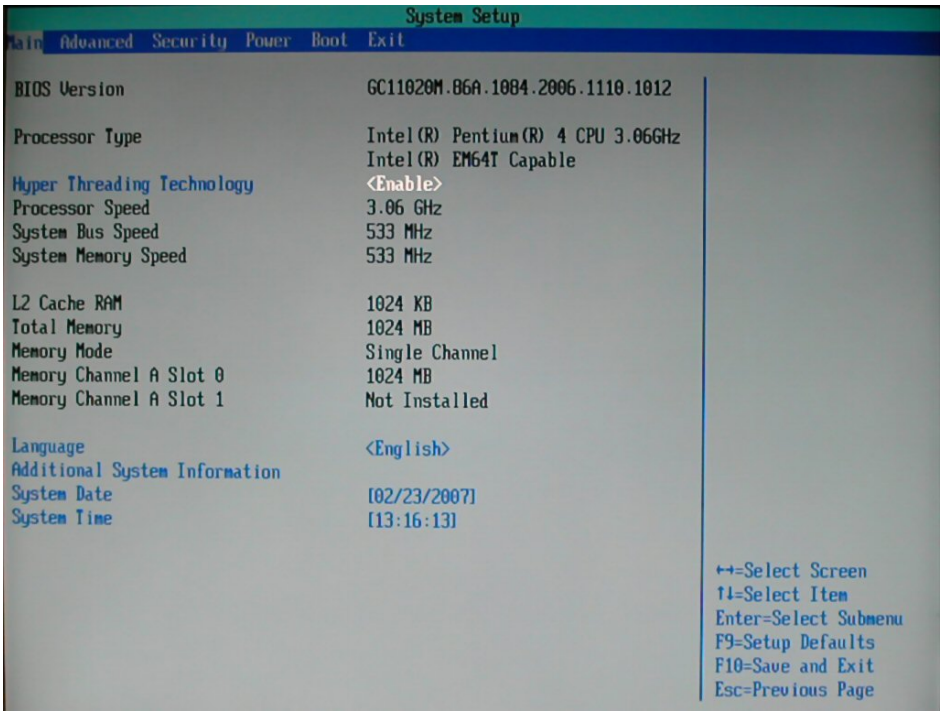

Figure 83: Intel BIOS start screen. You'll want the **'Boot'** tab (at the top).

Using the BIOS Utility When you've successfully entered the BIOS Configuration program, you will most likely see a DOS-style application, without windows or a fancy GUI. Use your ninja powers of perception to examine your environment. There will probably be some basic directions somewhere on the screen telling you how to navigate the program. As with the last step, no two BIOS utilities are alike, so we can't give you any specific instructions.

We can tell you roughly what you are looking for. You want to change the **'Boot order'** or **'Boot configuration'**. Essentially, have your keen ninja senses open for the word "Boot". You will probably not find it in the top level menu, so don't be surprised if you have to check two or even three levels deep for the setting.

Note: You should be careful not to change anything else while you're here, but every BIOS utility we have ever seen has a way to exit the BIOS without saving changes. If your ninja skills fail you, and you think you might have unintentionally changed a setting, ***Don't panic!*** Slowly, carefully follow the instructions on the screen to exit the BIOS without saving. Then reboot your system and try again.

Changing the Boot Order Eventually, hopefully, you will find a setting for something like **'Boot Order'**, **'Boot Priority'**, or **'Boot Sequence'**. This is your target! Again, we wish we could tell you specifically how to change this setting, but we can tell you what you are trying to do.

Every time your system reboots, it checks a sequence of devices, one after the other, looking for an operating system. Once it finds that operating system, it stops looking. Among these device may be: Floppy drive, more than one hard disk drive (HDD), USB drive, CD and/or DVD drive, and more. What we want to do is change this sequence so that before it checks your hard drive, it will check your CD drive. How all those other devices get prioritized is up to you.

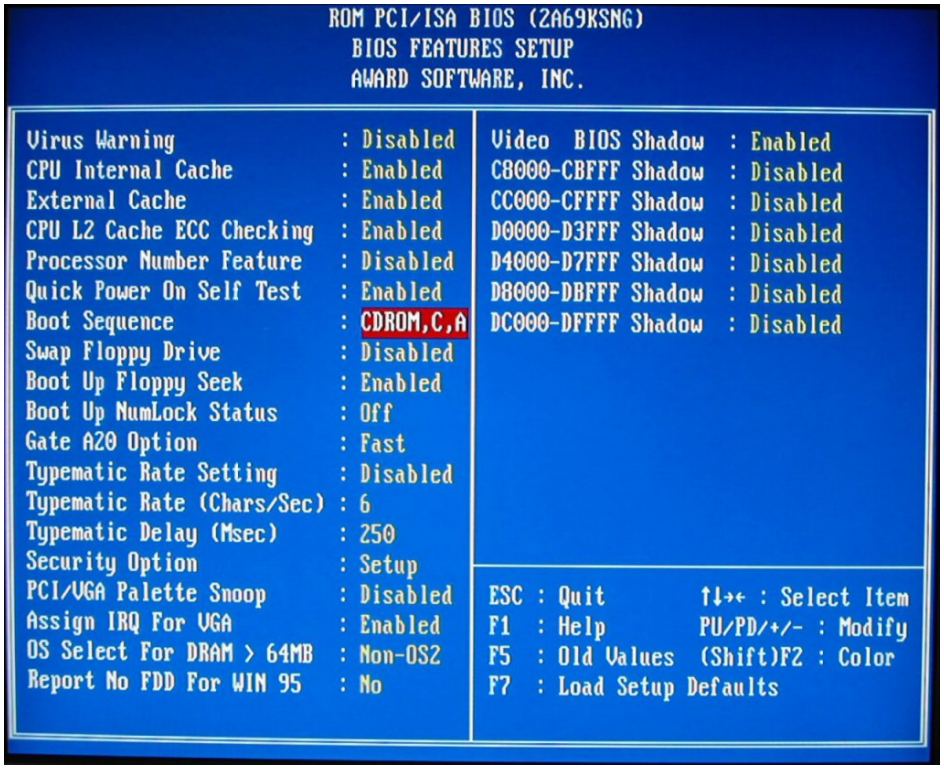

Figure 84: Award BIOS setup page, with the boot order entry highlighted.

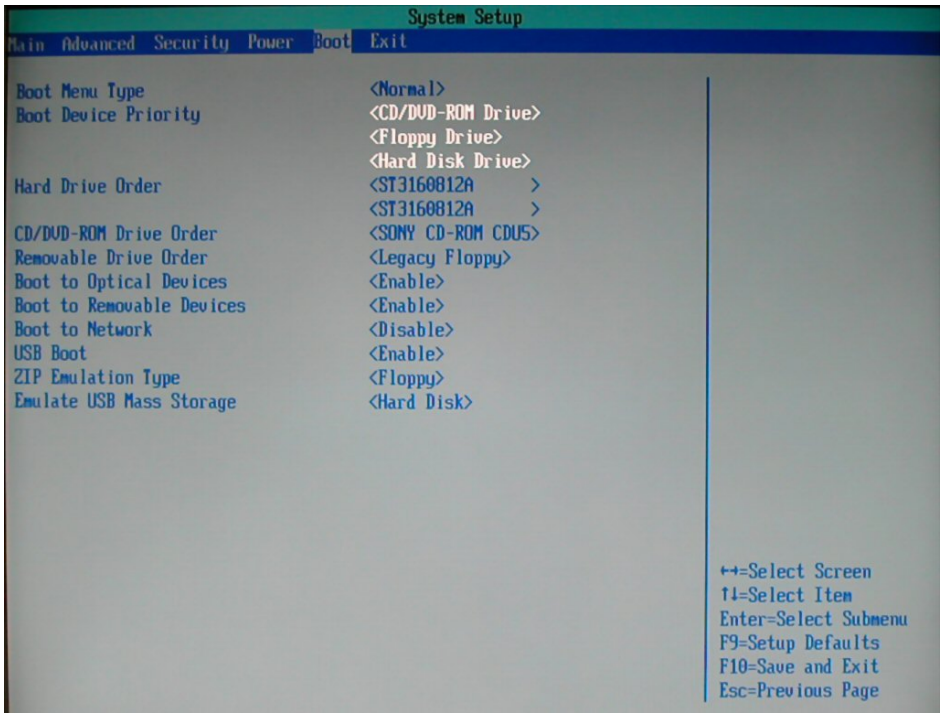

Figure 85: Intel BIOS boot screen, with the boot order entry highlighted.

Exiting the BIOS Utility Now that we've changed our boot order, we need to slip out of here unseen, without accidentally changing anything else. Examine the directions carefully, looking for a key that will let you **'Save and Exit'** or **'Save Changes'**. You may be able to do this from this screen or you may have to return to the main menu. If you've changed the boot sequence and you haven't touched anything else, save your changes and exit.

Now reboot your system with the T.O.V.A. CD in the drive and try again. This time it should boot to the T.O.V.A. PTE. Congratulations! Your mission is complete, and your honor is intact!

If it didn't work, you may want to review the directions, as unhelpful as they are, and try again. Or you may want to call T.O.V.A. Ninja, er, we mean, Technical Support. Our highly-trained operators will be honored to serve you.

24.2.3 Updating the T.O.V.A. 8 CD

If you are using the T.O.V.A. 8 CD as a boot CD, it's a good idea to update it every once in a while so that you're using the latest version of the PTE. While we provide no automated way to do this (yet!), the T.O.V.A. 8 CD itself is a CD-RW and can be updated by most CD-RW drives and CD burning software.

Downloading the new image Downloading the latest install CD image is easy, but the image can be quite large, over 150 MB. **Note:** This can take awhile even on broadband connections.

1. Open a browser and go to http://files.tovacompany.com/installers/release/images/install_cd/current.cgi.
2. Follow the prompts and download the latest .iso image to your desktop or some other known location.

Once you've downloaded the image, you need to burn it to a CD.

Burning a CD under Mac OS

1. Insert the T.O.V.A. boot CD (which is a CD-RW) or a blank CD-R/RW.
2. Open a Finder window.
3. At the left, under **'Places'**, open **'Applications'**.
4. Open **'Utilities'** folder.
5. Open **'Disk Utility'**.
6. Click the **'Burn'** icon in the toolbar (or **'Burn...'** in the Images menu, or Command-B).
7. Find and select the file `tova_boot_cd_$⟨$version$⟩$-g$⟨$nnnnnnn$⟩$.iso` that you downloaded.
8. Click **'Burn'**.
9. In the next dialog, click **'Burn'**. (default options are OK: Verify burned data, and Eject disc)
10. If asked to erase the disc, click **'Erase'**.

Burning a CD under Windows

1. **Note:** There is no standard way to burn a CD under Windows, so we are unable to provide thorough instructions. If you are uncomfortable with these directions, you may want to consult your tech support staff.
2. Insert the T.O.V.A. boot CD (which is a CD-RW) or a blank CD-R/RW into your CD burning drive. If any Autorun window pops up, close it.
3. Right-click on the downloaded ISO image.
4. Here's where it gets tough: In Windows 7, you may be able choose **'Burn disc image'** from this popup menu. This will open the image in the 'Windows Disc Image Burner', and you should be able to simply select **'Burn'**.

   If that option is not available to you, choose to **'Open'** the .iso in your CD burning software. Because different systems have different burning software, we cannot guide you through this; you will need to navigate your own software to burn the .iso image to the CD. **Note:** You do not want to just 'add' or 'copy' the .iso file to the CD. You want to **burn the image to the disc**.
5. If warned about erasing the disc (Figure 86), choose **'Yes'** or **'OK'**.

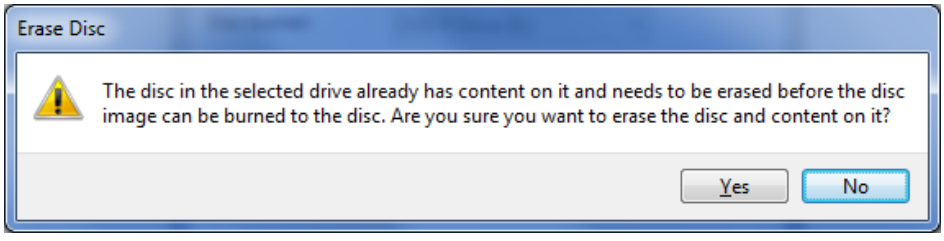

Figure 86: Erase warning—choose **'Yes'**

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 latest PTE.

24.3 T.O.V.A. PTE Activation service

Note: This section applies only to Windows users.

The T.O.V.A. 8 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. 8 service performs these functions on request. These include the following:

- Making temporary changes to `BOOT.INI` (Windows XP) or the Boot Configuration Data (Vista/7).
- Moving other files related to booting the PTE.
- Verifying the authenticity of updates to the T.O.V.A. and then installing them.

24.3.1 Service errors

The T.O.V.A. 8 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.

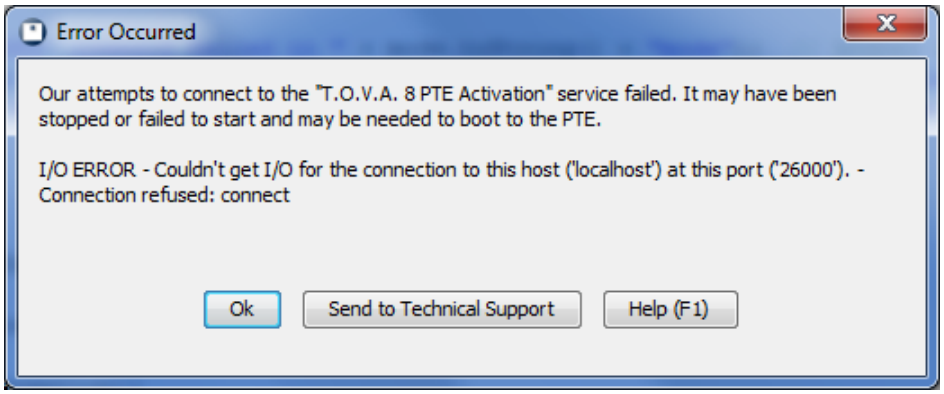

Figure 87: Failure to connect to the service

If you see the dialog above (Figure 87), there can be several reasons:

- **The T.O.V.A. 8 service may have failed to start.**

  You can start it manually by going to **'Control Panel'**, **'Administrative Tools'**, **'Services'**. Highlight **'TOVA 8 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 19 on page 63 for details). You may have software that is blocking the service, or it may not have installed properly.

- **The T.O.V.A. 8 service may still be starting up.**

  Windows startup is a little funny, and sometimes the T.O.V.A. 8 starts up before the T.O.V.A. 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. 8 service is already running, try restarting the T.O.V.A. to see if it still fails to communicate.

- **Port 26000 may be blocked or reserved**

  The T.O.V.A. 8 service communicates locally on port 26000 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. So this possibility is not likely, but we can handle this too.

  If you must block that port on your system, you can change the port number we use in the T.O.V.A. Advanced Preferences (section 18.6 on page 62) and in \tova_8\service\tova-pte-svc.ini. **Note:** You must change **both** settings for communication to work.

24.4 Startup

The T.O.V.A. will automatically startup after returning from the PTE. If you want the T.O.V.A. never to startup automatically in Windows, remove the shortcut from your Startup folder. For more information on the PTE, see section 24.1 on page 88.

25 How-To

This reference section gives simple instructions on technical procedures.

25.1 Debugging the PTE

If you encounter problems using the T.O.V.A. PTE, we may ask you to send us a debug log. This will send us information about how the PTE sees your system hardware and may enable us to improve the next version of the PTE.

Note: Generating a PTE log will overwrite any test data on the T.O.V.A. USB device.

1. Quit all of your open applications, saving your work as necessary.
2. Run the T.O.V.A.
3. If prompted, make sure to save any session data still on the T.O.V.A. USB device.
4. Choose **'Help'** and then **'Test PTE'**.
5. If **'Boot CD'** is not already checked, please check it.
6. Insert the T.O.V.A. CD that came with your T.O.V.A. kit into your CD drive.

   Note: If you are already able to boot the PTE without the CD and don't have your T.O.V.A. CD, you may leave **'Boot CD'** unchecked. When the PTE menu appears, press **'Ctrl'-'Alt'-'D'**, then proceed to Step 13 below.
7. Choose **'OK'**, and your computer will begin restarting.
8. **(Mac-only:)** After the power light goes out, press and hold the **'C'** key until the CD begins to boot.
9. Your computer *should* restart from the CD, and you should see a blue menu that says **'T.O.V.A. Boot CD'**.

   Note: If your computer does not boot from the CD, then you may need to reconfigure your computer to boot from the CD; see section 24.2.2 on page 91 for more information.
10. At the blue screen, you have three seconds to use your up and down arrow keys to select the **'Log debugging information to the T.O.V.A. Device'** menu item. If you don't get to it in three seconds, you can reboot your computer to try again.
11. Hit **'Enter'**, and the PTE will log your computer's hardware information to the T.O.V.A. USB device. When it's done, your computer will restart.
12. Eject the CD after your computer restarts. If you get back to the blue menu, then choose 'Return to your operating system'.
13. Your computer will start back up and, once you're logged in, automatically run the T.O.V.A. Note that it may take a few minutes to start up, depending on your computer.
14. Once the T.O.V.A. has started up, a dialog will appear saying "There is important technical information from the PTE...". Choose **'Yes'**.
15. Enter any necessary information into the Technical Support request dialog and choose **'Send'**.

Thank you for helping us improve the T.O.V.A.!

25.2 Manually updating the T.O.V.A.

With the T.O.V.A. 8'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: The user must have access to Administrator permissions. This is not an issue for most XP users, and it may not be a problem for most Vista or 7 users. Here's how you do it:

1. Find the latest update. This will depend on your operating system:

   Windows: Go to http://files.tovacompany.com/installers/release/windows/current.cgi.

   Mac OS X: Go to http://files.tovacompany.com/installers/release/mac/current.cgi.

   This will give you the **installer** (a **'.exe'** or **'.dmg'** file), and you should download it to somewhere you can find it.

   Note: The installer is large (about 50MB). If you have problems downloading it, you might need to find a system with a better internet connection. We've seen problems with some Wi-Fi connections, though most work fine. You can always download the installer from a more reliable connection to our included T.O.V.A. flash drive and take it to the other machine.

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.

25.2.1 Manually installing the JRE

Note: This is here for Windows users and does not apply to Mac systems.

The T.O.V.A. 8 is a Java program, and that means it requires the Java Runtime Environment to run. Specifically, we use **Java 1.6** (sometimes just called Java 6). When Java updates their JRE, we want to update yours as well, because updates can include bug and security fixes.

When Sun releases a new Java update, they will automatically prompt you to update it on your system. If you choose not to do so, the next T.O.V.A. version will probably include that update and install it automatically.

However, we've seen problems during testing with some JRE updates. While updating the T.O.V.A., If you encounter errors that mention the JRE, you can update the JRE yourself by browsing to http://files.tovacompany.com/installers/redist/windows/ and installing the latest JRE found there. Or you can go to Sun's Java site, http://www.java.com and find it there.

Once you've installed the latest version of Java 1.6, if you still encounter install errors, please contact T.O.V.A. Technical Support (section 19 on page 63). We want to keep our T.O.V.A. users up and running!

25.3 Moving a T.O.V.A. database

Note: We ALWAYS recommend that you have a recent backup of your data before attempting any procedure such as this.

Moving a T.O.V.A. database is easy. Let's say you want to move your shared database from its current location—your "**Source Path**"—to `c:\db`.

1. Exit the T.O.V.A. 8.
2. Run the **'T.O.V.A. 8 Setup'** (section 25.5 on page 102) go to **'Advanced'**, and then choose **'Database'**.
3. Note the database type selected and the path to that database: This is your **Source Path**. For example, `C:\Documents and Settings\All Users\Application Data\TOVA\data`.
4. Browse to the new database location. For example, if you browse to `c:\db`, the database will be created at `c:\db\data`.
5. Choose **'Close'**, then **'Save'** to exit T.O.V.A. 8 Setup.
6. Browse to your **Source Path** and then go up one folder, so that you can see your `data` folder.
7. Move the `data` folder with its contents to the new location, `c:\db`. You can drag-and-drop, copy-and-paste, etc.
8. Run the T.O.V.A. 8. You should see your T.O.V.A. data in the main window. Choose **'Preferences'**, **'Advanced'**, and **'Database'** to verify that the database is at the new path.

Note: If your computer is shared by multiple users, make sure the new path to the database has the correct file/folder permissions.

25.4 Reassigning a session to a different subject

Note: It's important that you make sure you're administering the T.O.V.A. test for the correct subject, as children below the age of five-and-a-half do not take the same test as older subjects. If you administer the wrong test to your subject, the T.O.V.A. will not be able to properly interpret it.

Note: 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 tests that have been administered or assigned to the wrong subject, but you should do so cautiously. Do the following:

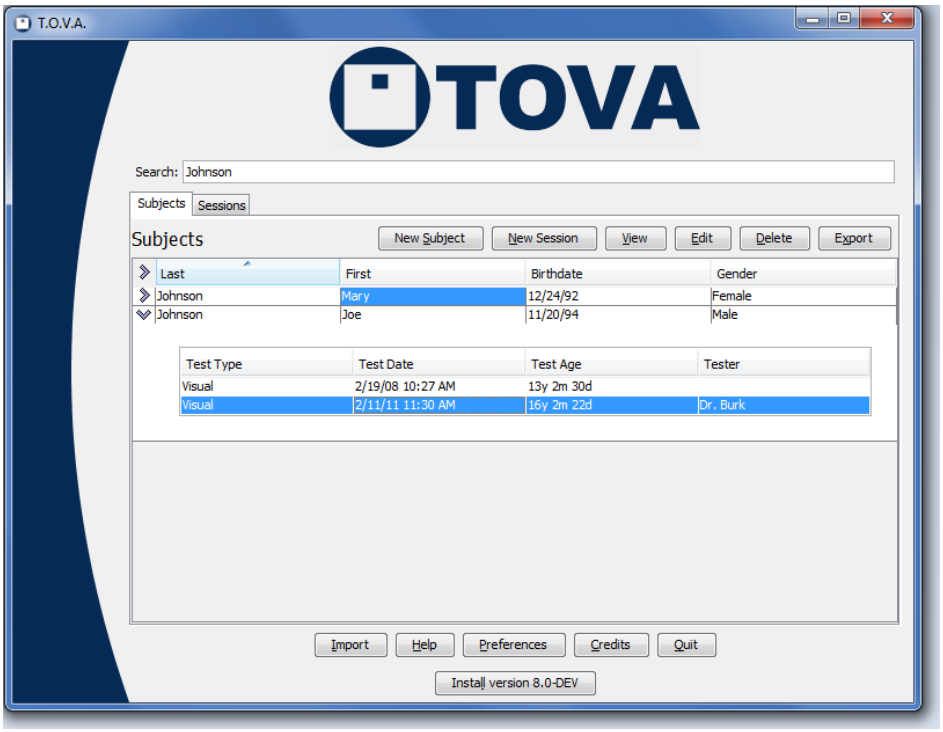

Figure 88: Click and drag the session

1. If you have too many subjects, enter a search term that includes both subjects (See section 26.2 on page 109 for details).
2. Click the **'Subjects'** tab, if it's not already selected.
3. Click the '>' symbol, to expand the subject that contains the test to be moved.
4. Click the test to move and, holding the left mouse button down, drag the test to the target subject. Release the mouse button.
5. Click **'Yes'** to confirm that you want to reassign the test.

25.5 Modifying 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, you should run **T.O.V.A. 8 Setup** with administrative privileges.

25.5.1 On Windows

1. Go to T.O.V.A. 8 in your Start menu.
2. Right-click on 'T.O.V.A. 8 Setup'.
3. Choose 'Run as...' or 'Run as administrator'.
4. Enter or select the login information for the administrator of your system.

This will allow you to modify the admin settings.

Note: If you use this method to run the main T.O.V.A. 8 application as an administrator, you may want to avoid modifying user settings. Any changes you make could be to the administrative user's preferences, and not your own. For instance, if you change the separate database path, you may be changing it for the administrator, not you.

25.5.2 On Mac

Most users who have one account on their computer have that account configured as an Administrator already and can edit admin preferences. There is a script in the TOVA folder to give more limited users temporary access to admin preferences.

1. In the Finder, go to the TOVA folder in your Applications directory.
2. Double-click on the 'T.O.V.A. Setup.command' script. This will open a Terminal window.
3. (If this is the first time you have run this script, you may get a message about using the dangers of running restricted programs. Hit **'Enter'** to dismiss this message.)
4. Enter your password at the 'Password:' prompt, followed by **'Enter'**. For security, your typing will not appear.
5. T.O.V.A. 8 Setup will run, allowing you to edit the admin preferences. See section 17 on page 52 for more information.
6. When you have finished editing preferences, click **'Save'** to save your changes. You may then also close the Terminal window.

25.6 Disabling 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.

To counter this, we've implemented a "mouse jiggle". While the T.O.V.A. test is being administered, the mouse cursor will move just slightly to the left and then the right. None of this is visible to the subject, because the T.O.V.A. USB device is sending a different video signal to the screen.

The mouse jiggle does not work on all OSes, however. Specifically, it seems to have no effect on Windows XP, though we suspect other OSes could have the same issue depending on their mouse driver or other special configuration.

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 should wait at least an hour.

Note: How to disable Sleep Mode on a given system can vary somewhat. If the instructions below don't work for you, contact your system's manufacturer.

25.6.1 Disabling Sleep mode on Windows XP

1. Right-click on your desktop and choose **'Properties'** or go to **'Control Panel'**, **'Display'**.

2. Click on the Screen Saver tab and at the bottom click the **'Power'** button.
3. Systems vary on this, but under **'System standby'**, **'System hibernates'**, or any similar options, choose **'Never'**. That's the best way to ensure that your T.O.V.A. EAV Test session won't be ruined by Sleep mode.
4. Once you've disabled standby and hibernation, choose **'OK'**.

25.6.2 Disabling Sleep mode on Windows Vista/7

1. Click the Start button and type **'Power'**.
2. From the list that appears, choose **'Power options'**.
3. Select a new power plan if you want. For the selected plan, choose **'Change plan settings'**.
4. Under **'Put the computer to sleep:'**, choose **'Never'**. You may have to disable this in multiple places (**'Plugged in'**, **'On battery'**, etc.).
5. Click **'Save changes'**.

25.7 Test Instructions

The T.O.V.A. 8 features multimedia test instructions, available from the PTE and EAV session menu (section 10.5.2 on page 33), that can prepare your subject to take the T.O.V.A. Test. They combine simple instructions, both on-screen and spoken, with helpful photos and illustrations.

By default, the 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 may press **'S'** to turn off and on the sound, the **space bar** to pause the instructions, and the **left and right arrow keys** to go forward or backward. Press **'Esc'** to skip the instructions completely.

These 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, particularly if you're only using the book. The images to follow can help you.

25.7.1 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 89)* 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 89: 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 90)*, and the other has the small square near the bottom, like this *(indicate Figure 90)*. The squares will flash on the screen, like this: *(Multimedia instructions show a brief animation of the test.)*

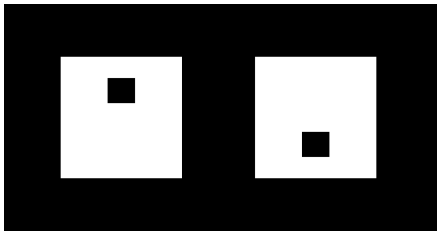

Figure 90: Visual Test Target/Non-Target stimuli

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.

25.7.2 Visual Test instructions

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.

25.7.3 Auditory 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)* 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 91: 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.

25.7.4 Auditory Test instructions

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.

26 Features

This reference section contains articles on specific features of the T.O.V.A.

26.1 The Main Window

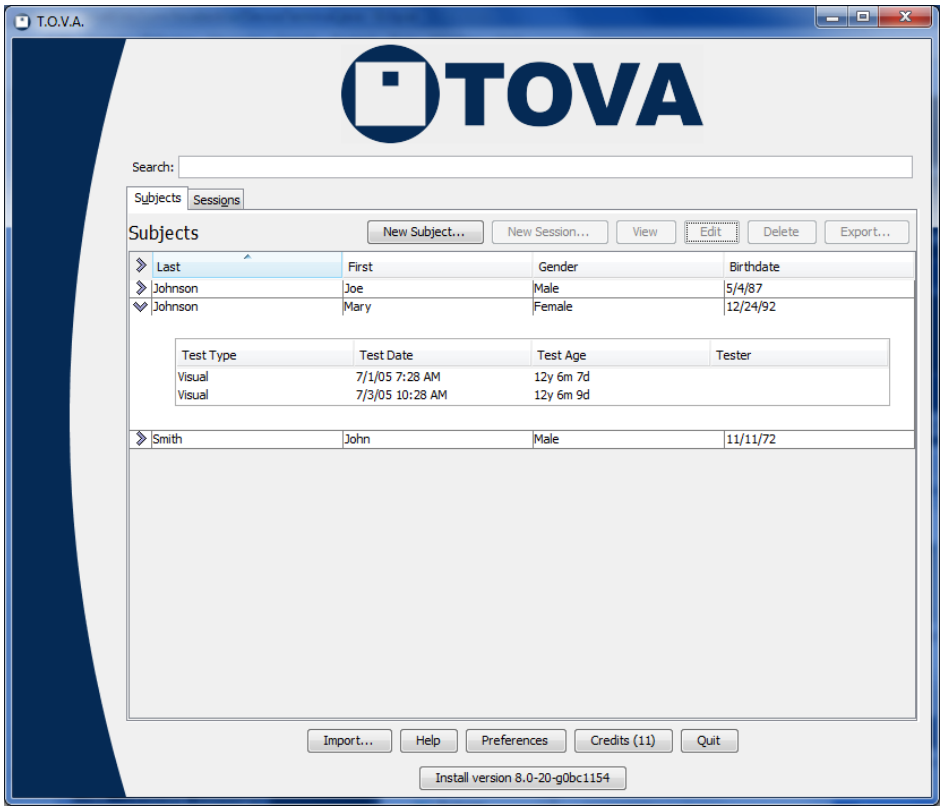

Figure 92: The main T.O.V.A. window

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 26.2 on page 109.

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 10.3.1 on page 27.

New Session - Start a new session for the selected subject. See section 10.4 on page 29.

View - Show a report for the selected session. See section 11 on page 38.

Compare - When you select multiple sessions in the current tab, you can choose **'Compare'** to see a report comparing the sessions. See section 26.5 on page 112.

Edit - Modify information for the selected Subject or Session. See section 26.3 on page 111.

Delete - Delete the selected Subjects or Sessions.

Export - Export the selected Subjects or Sessions to a PDF, T.O.V.A. file, or CSV. See section 15 on page 49.

Import - If you have old T.O.V.A. 7 data files or T.O.V.A. 8 files from a colleague, here you can import that data. See section 14 on page 44.

Help - Here you can read the other manuals, test the T.O.V.A. USB device and PTE, and contact us. See section 26.6 on page 113.

Preferences - Change the settings for the T.O.V.A. See section 17 on page 52.

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 12 on page 41.

Quit - Quit the T.O.V.A. This closes all other T.O.V.A. windows.

Install - If this button appears, there is an update

26.2 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 versa; search looks for records containing **all** search terms. 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 an integer(`1234`), then the term is also matched against subject number and session 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.)

26.2.1 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`

26.2.2 Other notes

- 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`. However, `"Joe Smith"` 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".

26.2.3 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!

26.2.4 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 17.5 on page 55.) 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 16 on page 51), 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.

26.3 Edit Session Information

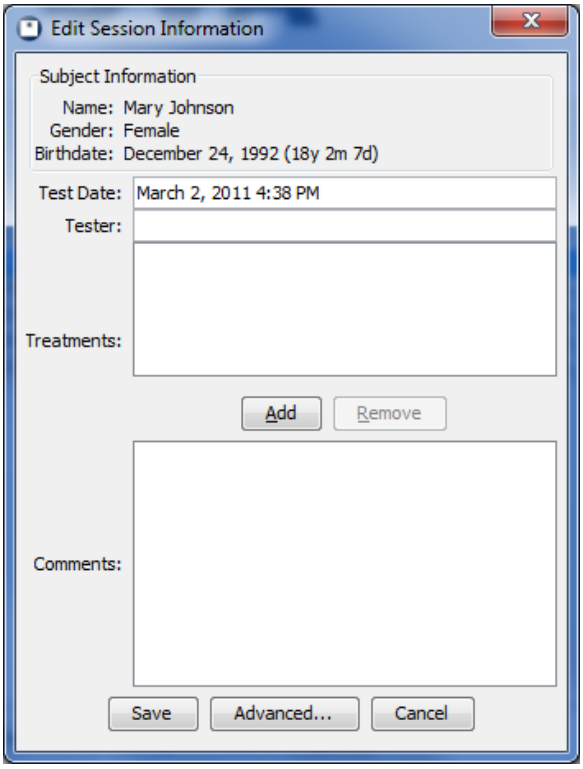

Figure 93: The Edit Session window

After you administer a session, you may want to add more information, such as medications administered (see **Treatments**, section 26.4 on page 112) 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.

26.4 Treatments

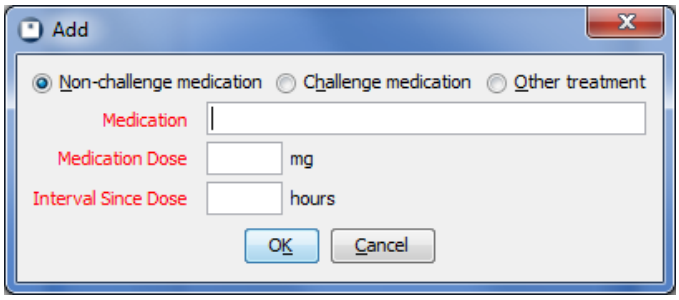

Figure 94: Enter the medication information

You can use the T.O.V.A. 8 to objectively assess the effectiveness of medications and other treatments. 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.

26.5 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.

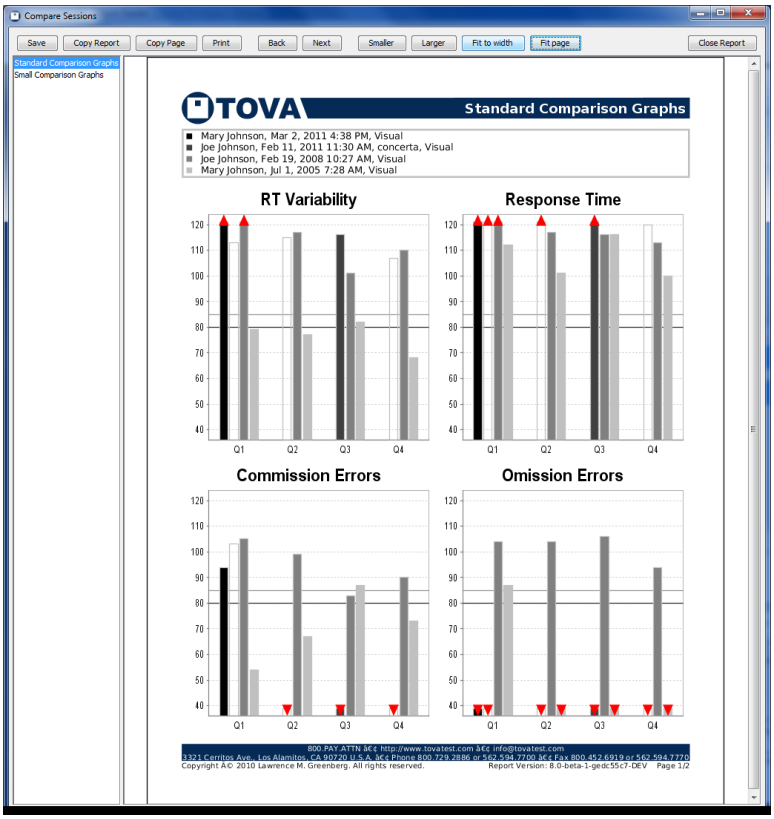

Figure 95: The Comparison Report

There are two 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.

26.6 The Help Window

Here you can read the other manuals, test the T.O.V.A. USB device and PTE, and contact us.

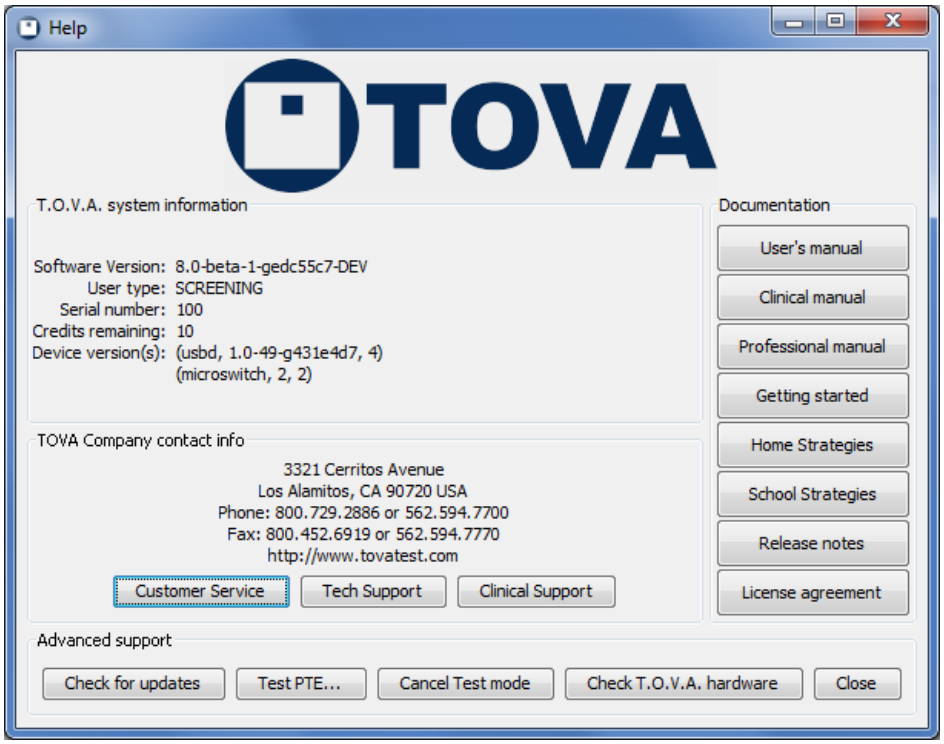

Figure 96: The Help Window

26.6.1 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.

26.6.2 Contact

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 19 on page 63.

26.6.3 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!

Clinical manual - Helps the clinician use the T.O.V.A. to assess attention and to identify and monitor attention deficits

Screening manual - Helps the non-clinician use the T.O.V.A. to screen for attention disorders and establish baselines of attention

Professional manual - Describes the internal guts of the T.O.V.A. from a test construction and statistical point of view

Getting started - Goes directly to the **'Getting Started'** section of the User's manual

Home/School Strategies - Formerly **'Interventions'**, use these to recommend Individualized Success Strategies. See section 21 on page 70.

Release notes - Information on changes to the T.O.V.A. software

License agreement - Important legal information about the T.O.V.A.

26.6.4 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.

Check for updates - Checks if there is a new version of the T.O.V.A. available. Especially useful if you've turned off Automatic Updates (section 18.5 on page 61).

Test PTE - 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. See section 24.1.2 on page 90 for more information.

Cancel Test mode - *(Windows only)* This will tell the T.O.V.A. 8 service to clear away temporary changes to your `boot.ini` (Windows XP) or Boot Configuration Data (Windows Vista/7). See section 24.3 on page 97.

Check T.O.V.A. hardware - Contains a number of functions to test your T.O.V.A. hardware and its connections. See section 23.3 on page 82.

Close - Closes the Help window.

27 Miscellaneous

This reference section contains the articles that don't fit elsewhere.

27.1 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.

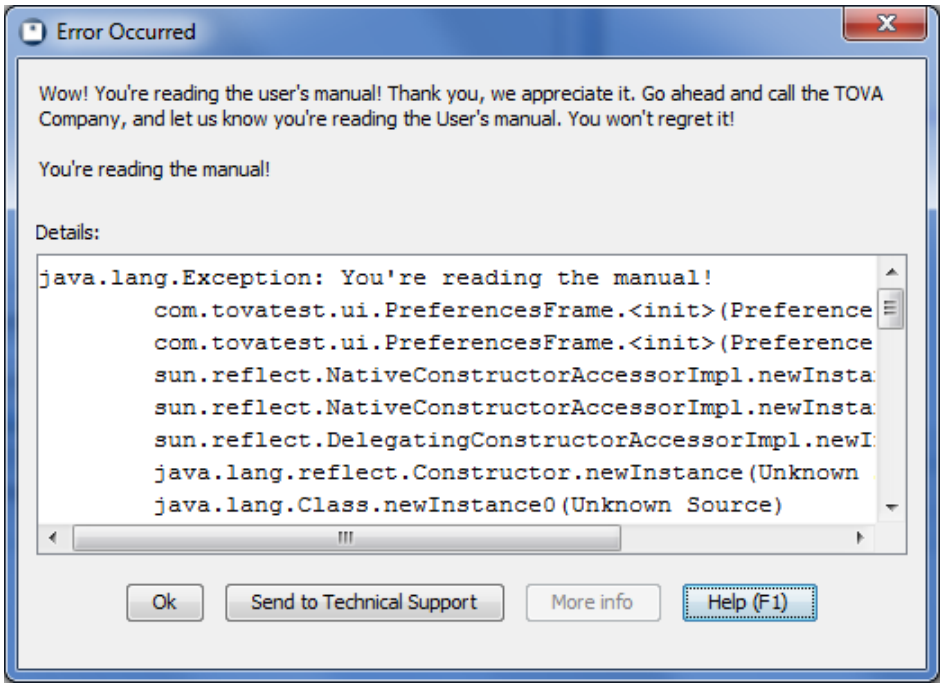

Figure 97: An Error window

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 Technical Support interface: Just click 'Send to Tech Support' from most error windows or see section 19 on page 63 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**!

27.2 Finding your data

Having trouble finding your T.O.V.A. data? There are a few possible explanations for this:

- 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 browse 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 are two database configurations: Shared and Separate. You can find your current selection in the Advanced Preferences (section 18.1 on page 57). 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 only supports storing your database locally, not on a network. See section 18.1 on page 57 for more information.

27.3 Linux and the T.O.V.A.

While we do not support running the T.O.V.A. on a Linux-based OS, the configuration should be workable. Because of the many flavors of the OS and the limited audience, we have not written specific procedures for a Linux install or operation. Our developers regularly run the T.O.V.A. on Debian GNU/Linux, however, so here is what we can recommend to those brave pioneers who prefer (or require) this environment.

Warning: These notes are intended for experts in Linux system administration. We welcome suggestions both for improving the T.O.V.A.'s support for Linux and for improving this documentation.

- We don't have an installer for Linux, and not all of the components needed for a fully-functioning T.O.V.A. 8 on Linux are distributed with the Windows or Mac installers. Please contact T.O.V.A. Technical Support if you would like a copy of the components you need.
- When you install by hand, you may need to edit system configuration. On Debian at least, the kernel sysctl net.ipv6.bindv6only is set to 1 out of the box. Sun Java fails to bring up networking with that setting. To fix on Debian:
  - edit `/etc/sysctl.d/bindv6only.conf`
  - change the line saying "`net.ipv6.bindv6only = 1`" to `0` instead
  - run `sudo /etc/init.d/procps restart` to apply the change without rebooting
- To use the T.O.V.A., you need a path to store your database. The T.O.V.A. supports a choice of two default locations, or you may select another path. You will need to make sure that you have write permission to that directory. For more information on database paths, see section 18.1 on page 57.
- The Automatic Update features provided by the T.O.V.A. on Windows and Mac are specific to those platforms and not currently supported in Linux.
- Communications with the T.O.V.A. USB device requires libftd2xx.so from FTDI. As of this writing, FTDI only provides x86 and x86-64 builds of that library for Linux, so those are the only architectures where the T.O.V.A. is fully usable. Additionally, you need a JNI stub to use that library with Java applications like the T.O.V.A. 8, and we do not include the Linux version of that stub with the Windows or Mac installers, so you will need to get it from T.O.V.A. Technical Support.

  If you only want to examine T.O.V.A. 7 and 8 files from other T.O.V.A. users, you should be able to use the T.O.V.A. 8 on any platform with a JVM compatible with Java 6.
- The T.O.V.A. 8 Precision Test Environment is implemented as a stripped-down Linux installation. While you technically could run the PTE from within a standard Linux installation, we strongly discourage doing so as such a configuration will not have sufficiently accurate timing for reliable test results. Instead we recommend either configuring GRUB to boot the PTE's kernel and initramfs, or using the T.O.V.A. installation CD, which doubles as a PTE boot CD.

- Our developers would love to hear from you if you actually try using the T.O.V.A. 8 in Linux! Please tell us how it goes.

27.4 Clinical vs. Screening

The T.O.V.A. recognizes two **User Types**, defined by the system's attached T.O.V.A. USB device:

1. Clinical users are licensed clinicians who are trained to administer tests. They use the T.O.V.A. as an aid in the diagnosis and treatment monitoring of attention problems. Uses of the Clinical Version include the following:
   - Measuring attention in persons without an attention disorder to determine attentional assets and liabilities, as well as to establish baseline functioning in individuals at risk for head injuries (e.g., accidents, sports, military service) or for CNS disorders
   - Measuring attention in individuals being evaluated for an attention disorder, including ADHD and Traumatic Brain Injury
   - Measuring attention in other disorders affecting the brain, including AIDS and dementia
   - Measuring effects of nonmedical treatment interventions, including neurofeedback
   - Measuring medication effects using a challenge dose of a stimulant medication
   - Helping document the optimal dosage of medication
   - Monitoring the course of attention problems and treatment over time
2. Screening users are not licensed clinicians and may not be trained to administer tests. These may be vocational counselors, school nurses, etc. They should only use the T.O.V.A. for screening people for attention problems. The Screening Version of the T.O.V.A. is used by schools, other educational settings (including learning centers), rehabilitation programs, non-licensed health care professionals, and others who don't need or qualify for the clinical version. Uses of the Screening Version include the following:
   - Measuring attention in persons without an attention disorder to determine attentional assets and liabilities, as well as to establish baseline functioning in individuals at risk for head injuries (e.g., accidents, sports, military service) or for CNS disorders
   - Screening children and adults for attention problems

You will see the main difference between these versions in the T.O.V.A. Report: A T.O.V.A. test that is administered with a Screening T.O.V.A. USB device is a Screening test session, and the report will only contain a few of the pages available for a full Clinical report, and those are slightly altered. For more information, contact T.O.V.A. Clinical Support, section 19 on page 63.

28 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**.

boot drive - A flash drive included in your T.O.V.A. kit that you can use to install the T.O.V.A. and boot the PTE *(Windows only)*.

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 10.4.2 on page 30 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 10.4.2 on page 30), you must have a CRT or LCD display with a VGA connection to a separate computer. If you do not, you can probably still administer a PTE test (section 24.1 on page 88) instead.

Note: 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 10.4.2 on page 30, though you can probably still administer a PTE test (section 24.1 on page 88) instead.

Note: You can administer an EAV test on a laptop or notebook *if* you have a pair of separate 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.

OS - Your **Operating System** may be Windows XP, Windows Vista, Windows 7, or Mac OS X. It's the layer between the programs you run and all your computer's hardware.

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 24.1 on page 88 for more details.

install CD - See **T.O.V.A. CD**.

T.O.V.A. CD - The CD that comes with the T.O.V.A. It contains the Windows and Mac installers, as well as the T.O.V.A. documentation. It can also be used as a **boot CD** to boot the PTE (section 24.2 on page 91).

test credits - A test credit is used each time you save a session from the T.O.V.A. USB device. Unlike the T.O.V.A. 7, you **must** have test credits to administer T.O.V.A. tests. See section 12 on page 41 for more information on test credits.

T.O.V.A. USB device - The T.O.V.A. USB device is our new black box that is required for running the T.O.V.A. 8. See section 23.1 on page 73 for more details.