



**Instruction Manual
for
Sensory Sciences' WAT™**

(Wine Aroma Trainer)

Version 1.0

Sensory Science's Wine Aroma Trainer (WAT)[™]: Setting up the Instrument

1. Remove all components from packaging. You should have:

- One large gray box with tube (Olfactometer)
- One Laptop computer
- One power cord for the laptop
- One USB cable
- One 15 vdc power cord
- One computer mouse
- Four Teflon end pieces

2. Attach laptop to power supply and plug in to outlet. Attach mouse to the laptop.
3. Attach olfactometer to computer via the USB cable. (Do not connect the olfactometer to the computer via a USB hub.)
4. Plug the 15 vdc power supply into the olfactometer (back).
5. Always allow the computer to fully boot-up before running the WAT program.

About the WAT[™]

Sensory Science's Wine Aroma Trainer (WAT)[™] facilitates the process of learning wine aromas and the names or labels usually associated with them. The WAT[™] contains 40 unique aromas that are among the most frequent descriptors used to identify wine aromas. Each successive task in the WAT alters the number and type of cues provided to the student, making the identification process increasingly more difficult. Feedback is provided to aid in the learning process. In Phase 1 (Familiarization), an aroma is presented along with its name and a picture in order to aid the student in becoming acquainted with new and unfamiliar aromas. In Phase 2 (Forced Choice), four pictures and labels are presented as cues or prompts with each aroma. In Phase 3 (Multiple Choice), 20 labels are presented with each aroma, while in Phase 4 (No Prompt), no labels, pictures, or any type of prompts are given when the aroma is presented. Performance on the last three tests (but not Phase 1, Familiarization test) are saved in the Osmic folder on drive C to aid in identifying which aromas are being missed and to help track progress in learning the aromas.

Administering the tests

Title Page/Demographics

The first page displayed is the Title Page/Demographics page (Fig. 1.). The students fill in all boxes and this information is later attached to all data files. The last box on this page, "Check for Rating Scales", allows for two rating scales—one for intensity and one for pleasantness—to be displayed in Phase 2, Four Alternative Force-Choice. Since this information (ratings) does not need to be collected every time the program is run, the scales will be presented only when requested.

Main Menu

After the Title page, the next page to be presented is the Main Menu (Fig.2). This page is the entry point for the WAT and allows one of the four main programs to be selected. Clicking on the blue choice box selects the appropriate program.

Fig. 1.

The image shows a registration form on the left and a splash screen on the right. The registration form includes fields for I.D. Number, Age, Sex (M or F), First Name, Last Name, E-mail, Phone Number, Street Address, City, State, and Zip Code. There is also a checkbox for "Check for Rating Scales" and a "Check" button. The splash screen features the "WAT (Wine Aroma Trainer)" logo, the "Sensory Sciences LLC" logo, and the text "Cincinnati, OH", "Copyright © 2011", and "Version 1.0".

Fig. 2.

The image shows the main menu of the WAT program. At the top, the title "Sensory Sciences Wine Aroma Trainer" is displayed in blue text on a yellow background. Below the title, there is a text box on the left and a list of four phases on the right. The text box contains the following text: "Sensory Sciences' Wine Aroma Trainer (WAT) facilitates the process of learning wine aromas and the names or labels usually associated with them. Each successive task alters the number and type of cues, making the identification process increasingly more difficult. Feedback is provided to aid in the learning process. In Phase 1, an aroma is presented along with its name and a picture in order to aid the student in becoming acquainted with new and unfamiliar aromas. In Phase 2, four pictures and labels are presented with each aroma. In Phase 3, 20 labels are presented with each aroma, while in Phase 4, no labels, pictures, or any type of prompts are given when the aroma is presented. Please select one of the blue boxes (Phase 1-4) to continue." Below the text box is a "Close Program" button. The list of phases on the right consists of four items, each with a blue box containing the phase number and a text box containing the phase description: "Phase 1" with "Aroma Familiarization", "Phase 2" with "Four Alternative Force-Choice", "Phase 3" with "Twenty Alternative Force-Choice", and "Phase 4" with "No Prompt".

Phase 1, Familiarization

The 40 aromas in the WAT are divided into four groups of 10 each (Fig. 3). For each group selected, a screen appears containing 10 buttons (Fig. 4). Each button contains the name of one of the aromas. When a button is selected, it turns green for five seconds. During this period, an aroma is released from the tube corresponding to the name on the button, along with a picture of the object associated with the aroma, e.g., a blackberry. The aromas can be sampled as many times as the student desires. No data is collected during this exercise.

Fig. 3.

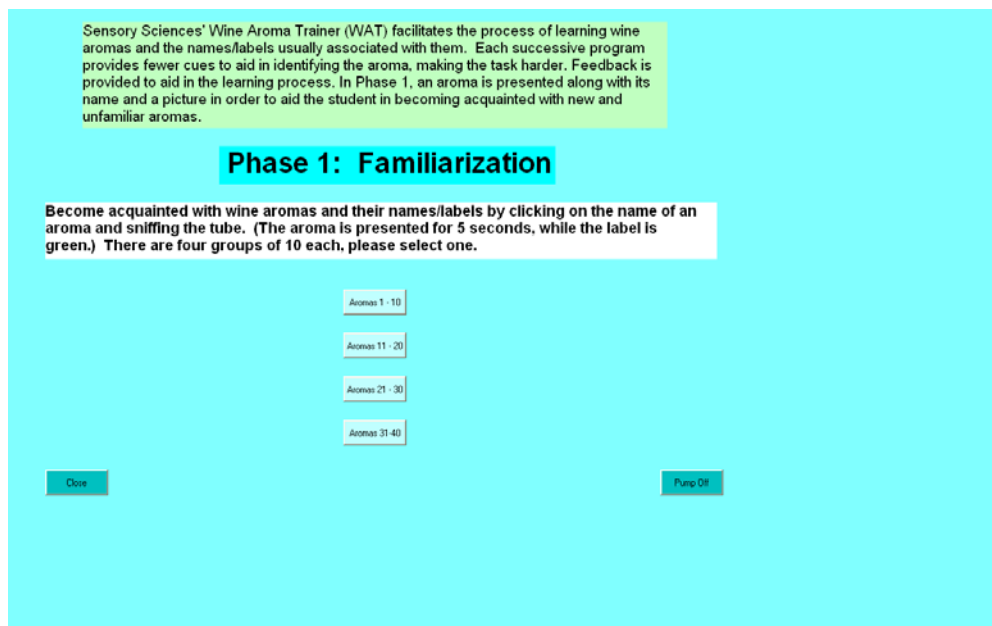


Fig. 4.



Phase 2, Forced-Choice

There are three tasks in Phase 2: the first presents aromas 1-20, the second presents aromas 21-40 and the third, 1-40 (Fig. 5). Each task begins with the option of 1) receiving instructions on how the task is conducted; 2) the opportunity to take a practice trial; or 3) proceeding directly to the task. In Phase 2, an aroma is presented along with four pictures, one which represents the aroma (Fig. 6). The student selects the box corresponding to his choice. Feedback is presented on whether the student's answer was correct or not, along with the correct answer. If the "rating scale" option was selected on the first page (Title/Demographics), two scales are next presented. The first asks the student to rate the intensity of the aroma on a scale of 1 to 9, 1 being the weakest, 9 being the strongest. The second scale asks the student to rate the pleasantness of the aroma on a scale of 1 to 9, 1 being Dislike extremely and 9 being Like extremely. Since the purpose the WAT is to facilitate learning of the aromas, the order of presentation of the aromas is altered on a pseudo-random schedule. To make sure the program is operating correctly, pressing "ctrl + d" will display 3 textboxes on the screen. The top box displays the current valve number which translates into the aroma being presented. The bottom box displays the sequence # (of the pseudo-random table) and the box to the right, the trial number. Pressing "ctrl + h" will hide the boxes. At the end of the task a "Thank You" screen is displayed. Pressing "r" will then display a summary table. Pressing "close" will terminate the program and cause the return to the home screen. (Pressing "escape" while the program is running will bring up a screen to terminate the program.) Data for this task is stored in C:\Osmic\WAT20a\Data for aromas 1-20, WAT20b\Data for aromas 21-40 and WAT40\data for aromas 1-40. Each data file contains demographic data from the title page along with number correct and data from each individual trial (aroma (correct answer), student's response, reaction time, and rating scales—if presented)

Fig. 5.

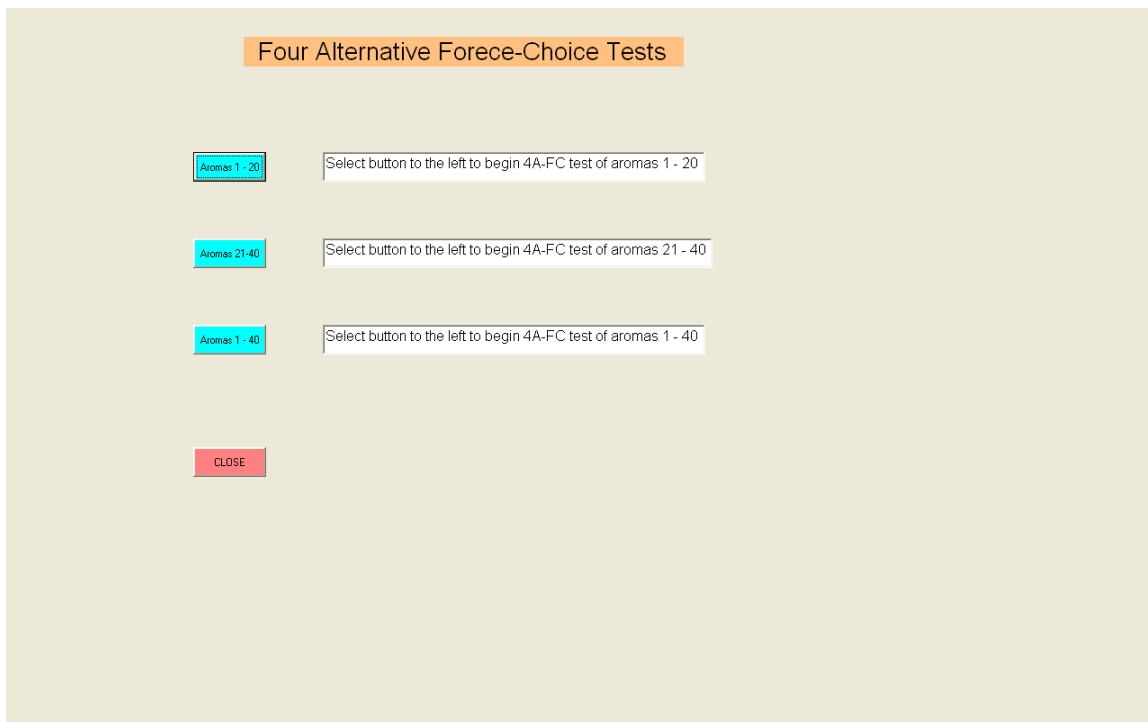


Fig. 6.



Phase 3, Multiple Choice 20

This task has seven options: presentation of aromas 1-10, 11-20, 21-30, 31-40, 1-20, 21-40, and 1-40 (Fig. 7). No pictures are presented in this task, but 20 labels are presented each time (Fig. 8). The odor is presented for 5 seconds and then the student must select one of the 20 labels displayed on the screen. In each task the “foil” labels are selected from the total population of 40. After the student selects a label, the correct answer is displayed. The order of presentation is pseudo-randomly determined. Pressing “ctrl + d” and “ctrl + H” will display and hide, respectively, the sequence number of the pseudo-random table (top left of screen) and the current valve number (aroma, center of screen). The box to the right is the trial counter. Data for this task is stored in C:\Osmic\WAT-MC20\Data. Each file contains demographics, number correct and a listing of the correct answer/response for individual trials. Pressing “escape” will terminate the program.

Fig. 7.

Sensory Sciences' Wine Aroma Trainer (WAT) facilitates the process of learning wine aromas and the names/labels usually associated with them. Each successive program provides fewer cues to aid in identifying the aroma, making the task harder. Feedback is provided to aid in the learning process. In Phase 3, an aroma is presented along with 20 labels, increasing the level of difficulty of the task.

Phase 3: Multiple Choice 20

Become acquainted with wine aromas and their names/labels by sniffing the aromas when presented. (The aroma is presented for 5 seconds, while the label is green.) Then select one out of the 20 labels as your choice. There are four groups of 10 each, please select one.

Aromas 1 - 10

Aromas 11 - 20

Aromas 21 - 30

Aromas 31-40

Close Pump Off

Fig. 8.

4 Phase 3: Multiple Choice 20 1 1

The Odor Is: Click on one name

Correct Answer Is: Leather

Number Correct

1

Blackberry	Lemon
Blackcurrant	Melon
Cedar	Mushroom
Cherry	Peach
Chocolate	Pear
Clove	Pineapple
Earth	Raspberry
Grapefruit	Strawberry
Honey	Violet
Leather	Walnut

Phase 4, No Prompt

Phase 4 is the ultimate test of how well the student has learned to identify the aromas. There are seven alternatives in Phase 4: four tasks in which 10 aromas are presented, two tasks in which 20 aromas are presented, and one task in which all 40 aromas are presented. An aroma is presented without any prompts, labels, etc., and the response must be typed in (Fig. 10.). (Currently, the spelling must be correct for the answer to be counted as correct. In the next version only the first three letters of the aroma name will be needed. This will make the task easier and be more tolerant of spelling mistakes. We believe the more active the response is (typing in the name versus selecting a box or saying a response), the better the learning. However this needs to be empirically verified.) Pressing “ctrl + d” and “ctrl + H” will display and hide, respectively, the current valve number (aroma, center of screen) and the sequence number of the pseudo-random table (top, to the right of the valve number). Pressing “escape” will terminate the program. The opening screen of Phase 4 also contains an option box, “Select for No Feedback”; this is useful to allow Phase 4 to be used as a “baseline” test and then as a measure for tracking improvement. Data is stored in C:\Osmic\NoPrompt Data and is the same format as MC20.

Fig. 9.

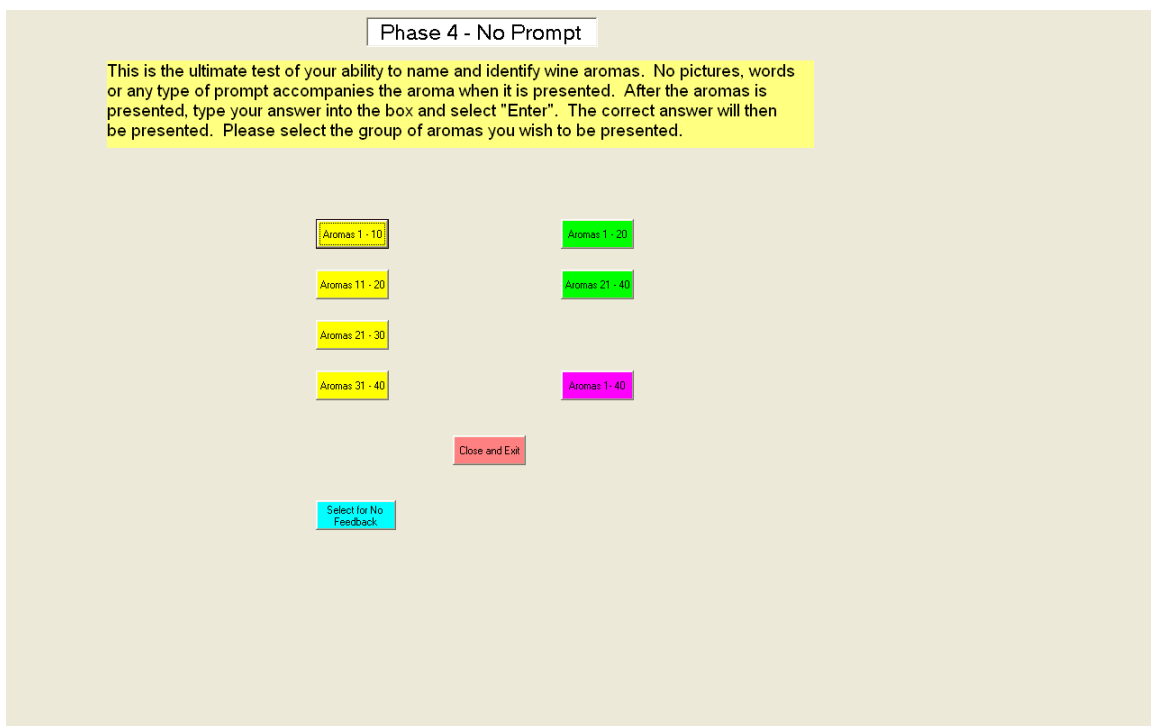
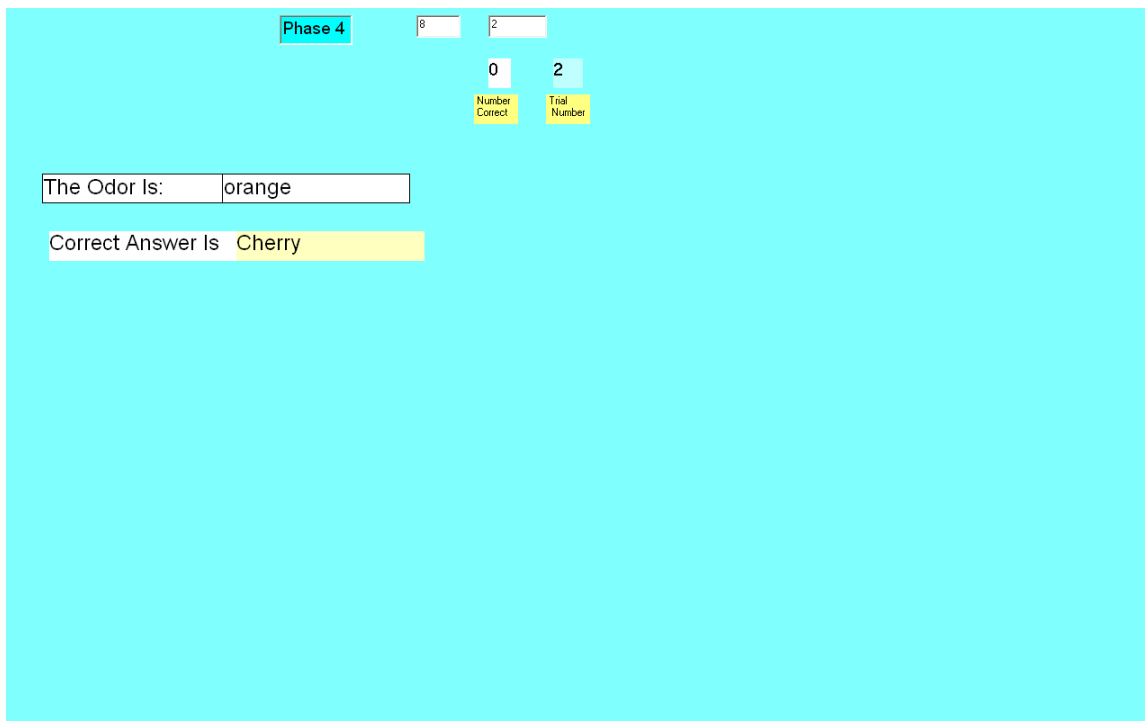


Fig. 10.



Enhancements in Future Upgrades

1. Instead of storing the data in text files, data will be stored in a database. This will allow reports to be generated which can be used to easily track a student's performance across the training sessions as well as tracking proficiency across extended periods of time. It will also allow "adaptive" learning by keeping track of the items with which a student is having the most difficulty and then modifying the test on an individual basis to focus on those problem aromas.
2. In the current software, the sequence of aroma presentation is altered via the use of look-up tables. This allows the page on which the aroma is designated as the target to be presented in a pseudo-random order, but the same "foils" or alternatives always accompany the target aroma. In the future, both the order of presentation and the foils can be presented in a random fashion.

Data Printouts

The next two pages are printouts of the data files. These files can be imported into an Excel spreadsheet for data analysis.

Data file for **Phase 2, WAT20a**. File is located at C:\Osmic\WAT20a\Data. For WAT20b the location is C:\Osmic\WAT20b\Data and for WAT40 the location is C:\Osmic\WAT40\Data. The WAT40 has 40 lines of data.

12-06-11 10-42-50

WAT20a

Student I.D.: 101

Age : 32

Sex : m

First Name : John

Last Name : Smith

E-Mail : jsmith@hotmail.com

Phone Number : 513 886 1234

Street Address ; 123 Easy Street

City ; Utopia

State ; OH

Zip Code ; 45000

Start Time : 10:37:16 AM

End Time : 10:42:50 AM

Total Time : 05:34

of Correct Responses: 14

of Incorrect Responses: 6

Total RT: 68.375002

Screen #	Screen File	Odor #	Response	Reaction Time	1=Correct, 0=Incorrect			
	Intensity (1-9)	Pleasantness (1-9)						
3	c:\Osmic\Pictures\pic6strawberry.bmp		1	1	3.32	1	3	5
4	c:\Osmic\Pictures\pic10melon.bmp		3	3	2.62	1	3	5
5	c:\Osmic\Pictures\pic7lemon.bmp		4	4	3.75	1	2	6
6	c:\Osmic\Pictures\pic1leather.bmp		1	1	2.86	1	3	6
7	c:\Osmic\Pictures\pic4violet.bmp		3	2	2.7	0	1	5
8	c:\Osmic\Pictures\pic13buttery.bmp		1	1	5.63	1	3	1
9	c:\Osmic\Pictures\pic14rose.bmp		3	3	2.63	1	2	8
10	c:\Osmic\Pictures\pic3earth.bmp		2	2	2.61	1	5	2
11	c:\Osmic\Pictures\pic2honey.bmp		2	2	2.89	1	5	7
12	c:\Osmic\Pictures\pic9pear.bmp		1	2	2.72	0	2	4
13	c:\Osmic\Pictures\pic11mint.bmp		2	2	3.17	1	3	6
14	c:\Osmic\Pictures\pic12almond.bmp		4	3	2.35	0	1	4
15	c:\Osmic\Pictures\pic8cherry.bmp		4	4	2.67	1	3	2
16	c:\Osmic\Pictures\pic17blackpepper.bmp		2	2	2.93	1	2	7
17	c:\Osmic\Pictures\pic5blackberry.bmp		2	1	7.03	0	3	6
18	c:\Osmic\Pictures\pic19smoke.bmp		1	1	2.77	1	8	4
19	c:\Osmic\Pictures\pic18cinnamon.bmp		4	2	7.35	0	2	5
20	c:\Osmic\Pictures\pic16apple.bmp		3	3	2.89	1	3	6
21	c:\Osmic\Pictures\pic20vanilla.bmp		3	3	2.66	1	2	6
22	c:\Osmic\Pictures\pic15grapefruit.bmp		2	3	2.83	0	2	3

Data file for Phase 3, MC20. File is located at C:\Osmic\WAT-MC20\Data.
Data file for Phase 4, No Prompt is in the same format and is found at
at C:\Osmic\NoPrompt Data.

12-06-11 10-55-01
MC20
Student I.D.: 101
Age : 32
Sex : m
First Name : John
Last Name : Smith
E-Mail : jsmith@hotmail.com
Phone Number : 513 886 1234
Street Address ; 123 Easy Street
City ; Utopia
State ; OH
Zip Code ; 45000
Start Time: 10:51:58 AM
End Time: 10:55:01 AM
#Correct: 9
Individual Trials - Correct Answer, Response
1 , Leather, Leather
2 , Strawberry, Strawberry
3 , Honey, Honey
4 , Cherry, Cherry
5 , Blackberry, Blackberry
6 , Lemon, Lemon
7 , Melon, Melon
8 , Earth, Earth
9 , Pear, Pear
10 , Violet, Raspberry