Easy IAT: An Open-Source and Customizable Online Implicit Association Test

github.com/theunvarnished/EasyIAT

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Abstract

The Easy IAT is an open-source implementation of the implicit association test (IAT; Greenwald, McGhee, and Schwartz 1998) that allows researchers to easily build and run custom IATs online. It is meant to be a free alternative to proprietary programs such as DirectRT or Inquisit by Millisecond Software. The Easy IAT program is written in standard html5 and javascript and can be run from any server without additional dependencies. These technologies have been shown to produce consistent and reasonably accurate response times for online behavioral tasks across platforms (Reimers and Stewart 2014). Easy IAT provides an easy, simple setup for all types of IAT including the traditional IAT and single target IAT and accepts any text and all image file types for stimuli. Python scripts for calculating D-scores are provided for all standard IAT types. Additionally, powerful configuration files allow researchers to easily create and deploy custom IATs with any number of blocks, trials, and stimuli. The standard interface is modern, sleek looking and scales to window size to provide a consistent experience for participants. Easy IAT can also be easily embedded into larger experiments or websites and provides unique participant identifiers to easily match participant IAT data to data collected from other surveys or experimental applications. Full access and rights are given to the source code to allow interested researchers to modify the application as much as they may need. Easy IAT provides a simple method to run implicit association tasks online or locally and is more flexible and modern than current alternatives.

Introduction: What is the IAT?

The implicit association test (IAT) is a quasi-experimental procedure to measure the strength of implicit associations between paired concepts. For example, the classic race IAT pairs GOOD-BAD with WHITE-BLACK and uses the reaction times in categorizing stimuli with these concepts to produce a D-Score which expresses the relative association of those concepts. The IAT is starting to become more commonly used in political science. Recent studies have used the IAT to look at attitudes toward immigration policy (Pérez 2010) and party identity (Theodoridis 2013).

What is Easy IAT?

Easy IAT is an open-source web-based implementation of the IAT, written in html5 and javascript. Reaction time measurements on the web using these and similar technologies are quite reliable and accurate (Reimers and Stewart 2014).

Easy IAT Requirements

The Easy IAT is server based and must be hosted using server software either on a web facing machine or on a local machine for local use.

To modify the files on your server, you will need an FTP (file transfer protocol) client, such as WinSCP.

To modify the contents of the configuration files, you will need a text editor, such as Notepad++.

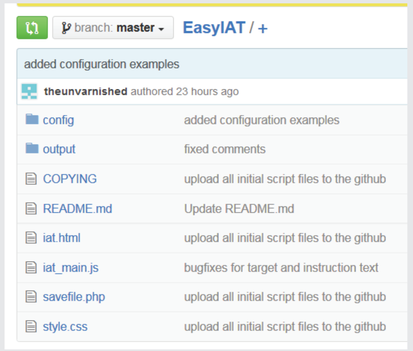
On your server you will need PHP, Python, and write permissions for web user in directory. For client-side (your participants' browser and computer), the requirement is a recent html5 and javascript capable web browser.

Easy IAT Setup

1) Copy the unpacked directory from Github onto your server. Each different IAT will need to have its own folder.

2) In the config folder, you will need to open the main iat_config.cfg file and change the local server path to match your own server. This path is where your main IAT folder is located.

3) Set write permissions for the IAT.



Creating IATs

The structure and content of your IAT is determined by the parameters in your configuration files.

The main config file (iat_config.cfg) contains the global parameters that set the number of blocks and the location of their config files, time between trials and the text for the instruction and debriefing screens. See figure 1 below.

```
{
"localServerPath":"http://replace_with_your_server_path",

"blockDirs": [ "block1", "block2", "block3", "block4", "block5", "block6", "block7"],

"postTrialPause":250,

"introScreen": {"line1":"Welcome to the Experiment", "line2":"Press Spacebar to Continue
```

Figure 1. Main Configuration File

The block configuration files (blockConfig.cfg) contain the categories for that block, the stimuli to be categorized, the number of trials to run, and the text for instructions. See figure 2 below.

```
{
"categories":{"Position1":"Good", "Position2":"Bad", "Target1":"Cat", "Target2":"Dog"},

"alternating":"yes",

"targets1": [ "txt dreadful  Bad",
"txt horrible  Bad",
"txt terrible  Bad",
"txt awful  Bad",
"txt unpleasant  Bad",
"txt marvelous  Good",
"txt superb  Good",
"txt fantastic  Good",
"txt glorious  Good",
"txt wonderful  Good"
],

"targets2": ["txt Feline  Target1",
"txt Tabby  Target1",
"txt Siamese Target1",
"txt Calico  Target1",
"txt Poodle  Target2",
"txt Labrador Target2",
"txt Terrier Target2",
"txt Beagle  Target2"
],
```

Figure 2. Block Configuration File

We have provided IAT templates, so users can replace sample categories and stimuli with their own. Below is a screenshot of a single trial of the IAT using the sample template (Figure 3).

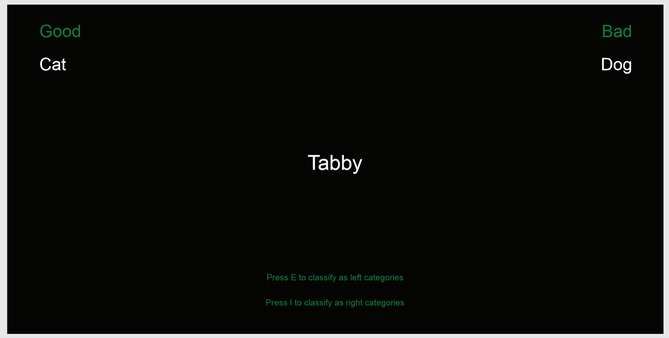


Figure 3. Sample IAT Screenshot

Easy IAT Customization

Easy IAT has many customization features. For example, you can create custom IATs with a different number of blocks, trials, and stimuli. For users interested in modifying the IAT procedure, the code in the iat_main.js file can be modified.

Data Output

Easy IAT records the data and saves it in the output folder. The data are outputted to text(.txt) files. The information includes the block number, attribute and target categories, initial randomization, stimuli information, and reaction time in milliseconds. See figure 4 for sample data output.

```
block2,Good,Bad, , ,1,txt horrible  Bad,570.9130000004734
block2,Good,Bad, , ,1,txt terrible  Bad,561.518000000433
block2,Good,Bad, , ,1,txt unpleasant  Bad,345.115000000078
block2,Good,Bad, , ,1,txt fantastic  Good,320.1310000004014
```

Figure 4. Sample IAT Data

We have included a Python script that loops through all the files in the directory and converts the reaction times into D-scores, which can then be used in data analysis.

Conclusion

We wanted to support open science and share our work, so that researchers and other interested individuals will be able to freely and easily use implicit association tests for their own purposes.

References

Greenwald, Anthony G., Debbie E. McGhee, and Jason L.K. Schwartz. 1998. "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test." Journal of Personality and Social Psychology 74(6): 1464-1480.

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