# ASCR ECX Evaluation Toolkit

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# README for ETK Compare Two Arrays Module

## File List:

* ETK-CompareTwoArraysQualtrics.html
* ETK-CompareTwoArraysQualtrics.css
* ETK-CompareTwoArraysQualtrics.js
* ETK-CompareTwoArraysREADME.docx
* ETK-CompareTwoArraysSurveyFlow.png
* Sample Images: TRUE\*, FALSE\*

## Overview

This module is intended to be run within a Qualtrics survey. Qualtrics survey software can be found at www.qualtrics.com.

The Compare Two Array module can be used in various ways. It can be used as a 2 Alternative Forced Choice method. 2AFC is a psychophysical technique to find a threshold or a change point. In this image-based implementation, a participant (study subject) is shown a series of pair-wise comparisons. Each pair consists of two images, one of which is a baseline or “true” image and the other of which has the difference stimuli present or absent. There are thus two arrays to be compared, the “base” array and the “diff” array. Each pair of image is shown randomly as A vs. B or B vs. A. The set of pairwise comparisons are shown in random order.

Alternately, the CompareTwoArray module could be used to run a (reduced set) Round Robin type of study where the two arrays are used to list a set of specific comparisons to be made.

A generic study within Qualtrics might consist of:

1. An IRB consent block/question.
2. An introduction block/question to explain the task and how an image should be chosen out of the pair shown.
3. A study block with a CompareTwoArrays module question.
4. A demographic block containing any relevant demographic questions.

## Instructions for implementation of the Compare Two Arrays Module

There are three files that work together for the implementation, an HTML, a CSS and a JavaScript file. The CSS file is added in the Look and Feel part of the survey options. Choose the Advanced tab and click on Add Custom CSS. Cut and paste the CSS sheet as directed. The HTML and JS files are added in the individual question. Choose a Descriptive Text question type. Click on the question text and an HTML View tab will appear. Click on the HTML tab and insert the HTML file. The lists of images will need to be updated as will the phrasing of the specific question under study. Lastly, to the left of the question is the settings icon. Click on the settings icon and choose Add JavaScript. The custom JavaScript code should be added in the JS editor.

Detailed information on developing surveys and using the Qualtrics JavaScript API can be found on the Qualtrics website.

Two sets of five example images are included so the user can explore the functionality. An imgURL variable is used to point to the URL host for the images and must be modified by the user.

For each image pair, information on which choice was made and which images were shown must be saved to embedded variables. The Qualtrics JavaScript API allows the user to write out information via the setEmbeddedData method. The embedded data variables MUST be created within the Survey Flow in order to save this information. An example Survey Flow screenshot in included. Each image is saved with the name of the image shown and the choice that is made (1= image from “base” array; 0= image from “diff” array). The default variable name is n\* and the default variable for the choice is c\*. If the user wishes to change those names, the JavaScript file must be edited so that the embedded data variable names match the ones created in the survey flow. More information on creating embedded data variables and the survey flow can be found on the Qualtrics website.

A Boolean variable, AllOneSide, is used as a check to make sure that participants are faithfully completing the task. If a user always chooses the left (or right) button, the AllOneSide flag is set to 1. This can be used in post-processing to remove bad participants. Again, AllOneSide must be declared in the Survey Flow as an Embedded Variable (with no preset value). Note that if AllOneSide is false, it is not written out by Qualtrics.

A timing variable, timeDelay, is used to set a slight delay before each image appears. For images with high levels of similarity, this can make it easier for subjects to realize that there is a new set of images. The default is 250ms.

## Amazon Mechanical Turk

Amazon Mechanical Turk, <https://www.mturk.com/mturk/welcome>, is a crowdsourcing site that can provide a convenient source of study participants for online studies. A URL link to a Qualtrics study can be input into an Mturk HIT to launch a study. More information can be found on the Mechanical Turk website.

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