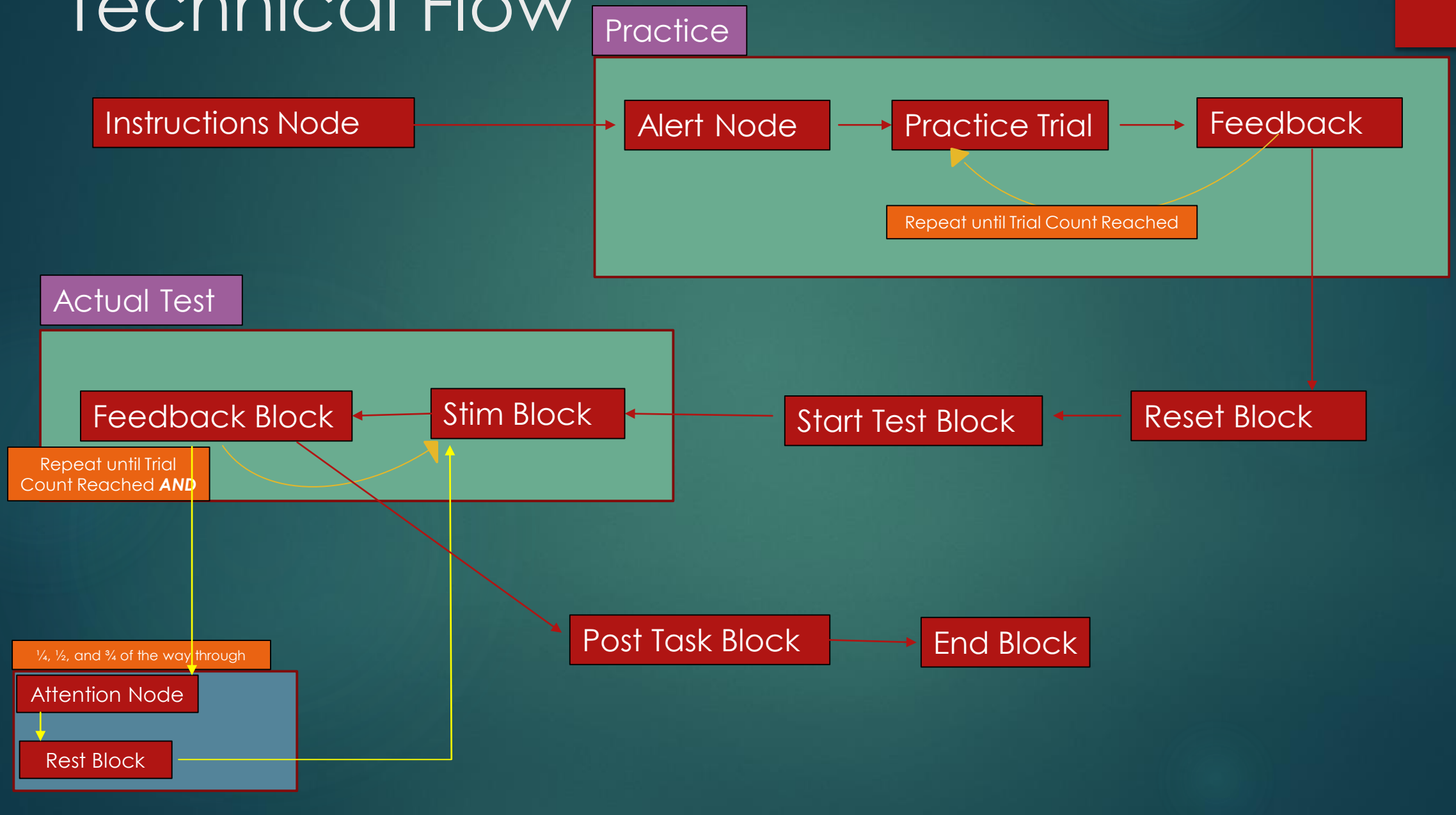
Shift-Task Explained

AFTER REVISIONS

Technical Flow

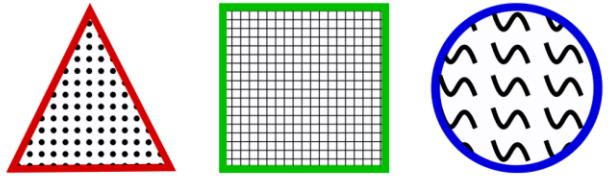


Instructions

Original

On each trial of this experiment three patterned objects will be presented. They will differ in their color, shape and internal pattern.

For instance, the objects may look something like this:



Next

Revised

Experiment:
You will be presented with three objects on each trial. Each will have a different color, shape and pattern.
For example, the three objects could look like this:

Next

On each trial you select one of the objects to get points using the arrow keys (left, down and right keys for the left, middle and right objects, respectively). The object you choose determines the chance of getting a point.

The objects differ in three dimensions: their color (red, blue, green), shape (square, circle, triangle) and pattern (lines, dots, waves). Only one dimension (color, shape or pattern) is relevant for determining the probability of winning a point at any time.

One feature of that dimension will result in rewards more often than the others. For instance, if the relevant dimension is "color", "blue" objects may result in earning a point more often than "green" or "red" objects.

Importantly, all rewards are probabilistic. This means that even the best object will sometimes not result in any points and bad objects can sometimes give points.

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Controls:
You will have to select **one** of the three objects to earn points using the arrow keys.

- left arrow = left object
- down arrow = middle object
- right arrow = right object

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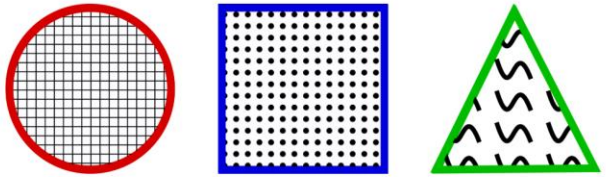
Note:
Each object will have three different features:

- color (red, blue, green)
- shape (square, circle, triangle)
- pattern (lines, dots, waves)



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The relevant dimension and feature can change between trials. One trial "color" may be the relevant dimension with "red" the relevant feature, while on the next trial "pattern" is the relevant dimension with "waves" the relevant feature.

During an initial practice session these changes will be explicitly signaled and you will be told what the relevant feature is. During the main task, however, there will be no explicit instructions - you will have to figure out the relevant feature yourself.

Your objective is to get as many point as possible! The trials go by quickly so you must respond quickly. There will be a number of breaks throughout the task. We will start with a practice session after you end instructions.

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Which to choose?

A specific color, shape, or pattern will determine the chance you win a point for that trial, but **only one** will be relevant at a time.
For example, if the high reward object is one whose color is blue, then selecting the blue object is more likely to grant you a point than the green, or red, objects.

How to earn points?

Choose the object with the right feature! However, selecting the optimal feature can sometimes fail to yield a point, and selecting objects other than the optimal one could still earn you a point. This is determined by chance.

The feature changes?

The relevant option and feature can change between trials. On one trial, color may be the relevant feature with red as the best option, while on the next trial *pattern* is the relevant feature with *waves* as the best option.

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Up Next:

First, there will be a practice session where you will be told which option is the “best.” During the main task, however, you will have to figure out the relevant feature yourself.

Try and get as many points as possible! The trials go by very quickly so you must respond quickly. There will be a few breaks throughout the main task. We will start with a practice session

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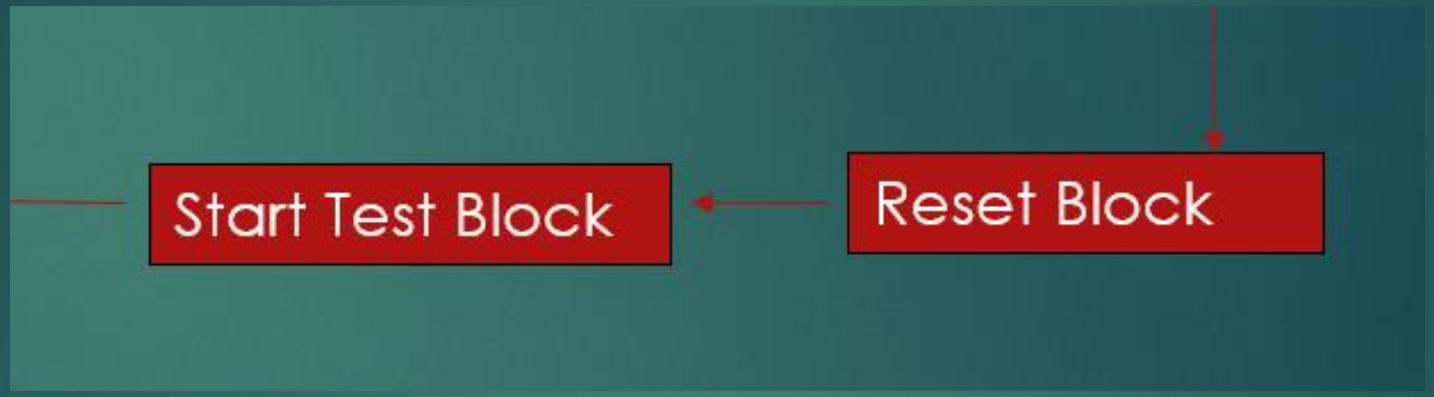
Practice Test

- There are 65 trials in Practice Test
- **Alert Node:**
  - Alert subject that shift happens during practice
- **Practice Trial:**
  - Just like main task except, subject is aware of relevant features
- **Feedback:**
  - Subject is told whether they received a point or not

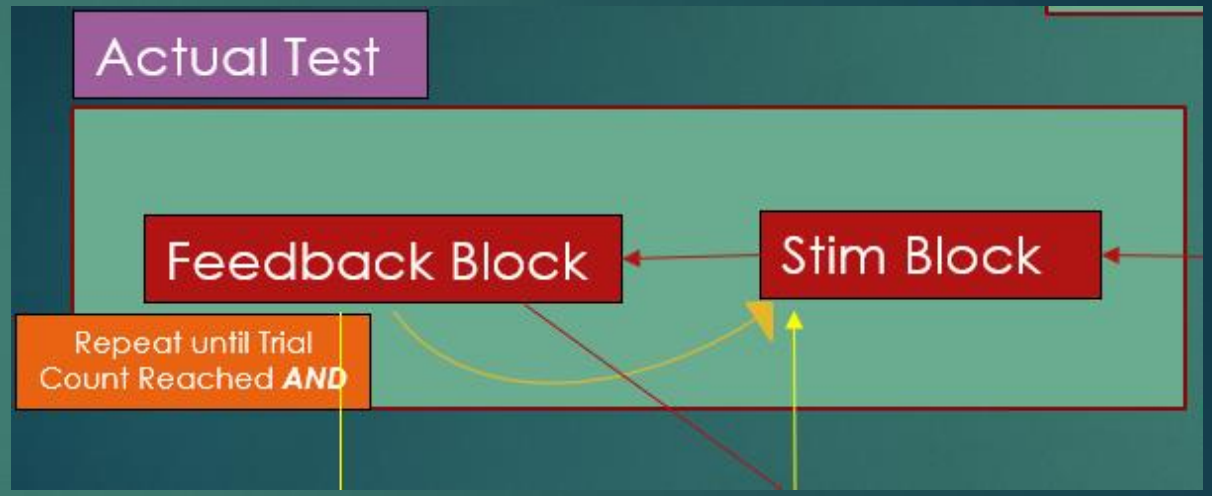
Reset Block and Start Test Block



- Inform subject of upcoming test
- Says:
  - "We will now start the test. You will no longer be told what the relevant feature is or when it switches. Press **enter** to begin."
- Initializes random variables and prepares other behind the scenes things

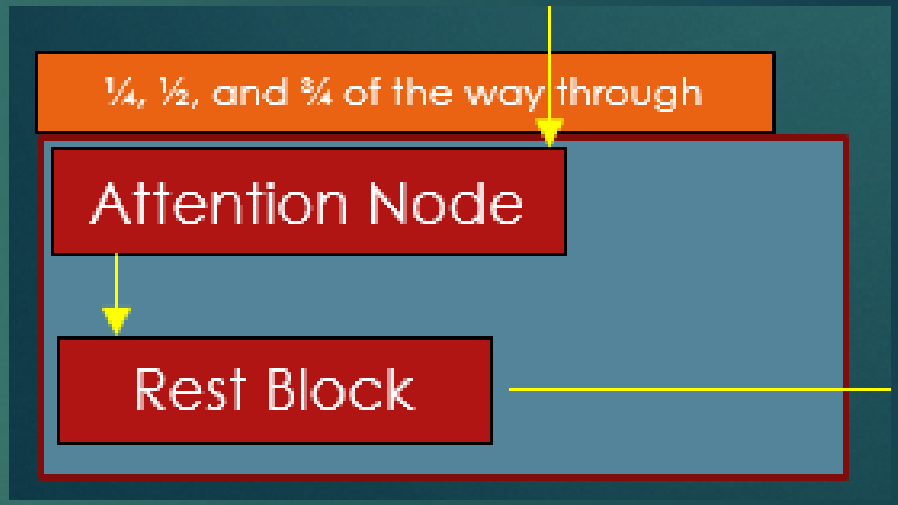
Actual Test

- There are 410 trials in the Actual Test
- **Stim Block:**
  - Subject is presented with a random set of 3 objects
- **Feedback Block:**
  - Subject is told whether they received a point or not



Attention Node and Rest Block

- Takes place at approximately ¼, ½, and ¾ of the way through the test
- **Attention Node:**
  - Alerts subject to a change
- **Rest Block:**
  - Subject can pause for 3 minutes (at maximum)
  - Can end rest at will by pressing enter



Post Task and End Blocks

- **Post Task Block:**
  - Survey for subject
  - Asks:
    - "Please summarize what you were asked to do in this task."
    - "Do you have any comments about this task?"
- **End Block:**
  - Says:
    - "Finished with this task. Press **enter** to continue."

Data

- Output is automatically downloaded as “shift-task_results.csv”
- Contains information for each trial on:

  - Timing
  - Full screen?
  - Given stimulus
  - Chosen object features
  - Position of chosen object
  - Shift type
  - Rewarded feature
  - Trials since switch
  - Current total points
  - Trial number
  - Practice or Actual Test
  - Correct choice?
  - Point awarded or not?