# *Module 3: Reflection and Risk Taking*

Stop-Signal Task (without visual feedback, SSRT1)

The Stop-Signal task is a method for testing inhibitory control mechanisms. Each time the participant clicks on the "Go" button, the target in the center of the screen lights up yellow for one second.   The basic task is to click on the target while it is still illuminated. However, on a minority of trials, there is an auditory signal, a whistle blowing, which tells the participant that they should withhold the response.   The time between the start of the trial and the whistle can be varied from 50 to 350msec. In general, the longer the delay, the more difficult it is to inhibit the response. Published research with similar procedures shows this difficulty in inhibition is particularly pronounced in individuals with impulse control disorders. Percent correct responses and reaction times under the various conditions are recorded, and regression analysis is used to estimate the time at which responses are correctly inhibited on 50% of trials.
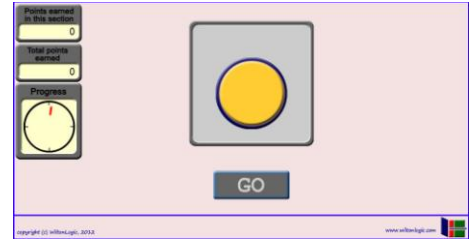
Uncertain Visual Discrimination (UVD)

In the stop signal task, there is only one response to make, and the participant is required to act at once based on the information on the screen at the start of the trial. However, one of the most important aspects of decision making is to wait for adequate information before acting. In everyday life important information comes spread out over time, and the UVR replicates this in a laboratory setting. The participant is shown five targets, each containing a blue circle. The size of the circle in each display continually increases and decreases in a randomized manner. In each trial, one of the five targets is selected at random by the computer as correct. The size of the blue circle in the correct target is not necessarily the largest at any one time, but has a higher probability of being large than the circles in the other four targets, and this probability increases as time goes on. In this way, responding quickly will be equivalent to making a 1/5 guess as to the correct target, whereas waiting for a few seconds provides time for unambiguous information to be presented.
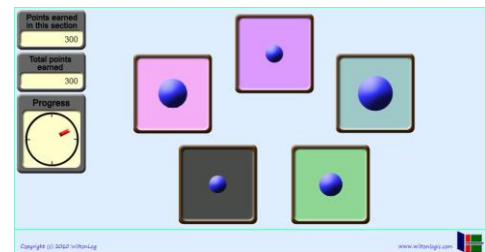
Touching the target with the most consistently large circle will produce the correct sound and reward points. Touching one of the incorrect targets produces the incorrect sound and no reward points. There are thirty opportunities to earn reward points in this test. The critical data are the percentage of correct choices, and the decision time for correct and incorrect choices.

Block Stacking Test (BST)

The block stacking test adds an element of risk into the decion making process. This test is based on the Balloon Analog Risk Test of Lejuez et al (2002) and performance in the tow tests is highly correlated. In the Block Stacking Test, test participants stack blocks by clicking on the oval target marked "Touch Here". These blocks can be collected at any time by clicking on the green "Collect" button, and each block is collected earns points. The number of blocks in the previous stack is shown in the meter on the "Block Box". On each trial a threshold number of blocks is set, and if the stack reaches that threshold it collapses, and the blocks are lost. The test participant must therefore balance the potential gain of adding a block to the stack with the risk of reaching the threshold set for that trial and losing all the blocks already stacked. The key measures from this task are the % of stacks collected and the mean hieght (number of blocks) in the stacks which are successfully collected.

A version of this test has been developed for use in imaging equipment, minimizing the motor response by clicking on button placed in the bottom right hand corner of the display.