

Name of test: Flanker Inhibitory Control & Attention Test

Estimated time burden: 7 minutes

Estimated number of items: up to 48

Materials:

iPad

Description:

The *Flanker Inhibitory Control & Attention Test* was developed based on work by Rueda and colleagues (2004) and provides a measure of inhibitory control and attention. The Flanker requires the participant to focus on a given stimulus while inhibiting attention to stimuli flanking it. In this version of the task, participants see a picture of a fish flanked by two other fish on either side. On congruent trials, all the fish are pointing in the same direction. On the incongruent trials, the flanker fish are pointing in the opposite direction of the central fish. Congruent and incongruent trials are intermixed in the block of standard trials. A prerecorded voice says "MIDDLE" to remind participants to focus on the MIDDLE stimulus. Participants are instructed to choose one of two "buttons" on the screen that corresponds to the direction in which the MIDDLE fish is pointing.

All the instructions are on the screen. The examiner reads them to and/or with the participant and points out the relevant aspects of the stimuli on the screen. To prevent inadvertent screen advancement by children, a touch-and-hold button will be implemented that will require a 1-second hold by the examiner to activate and advance the screen.

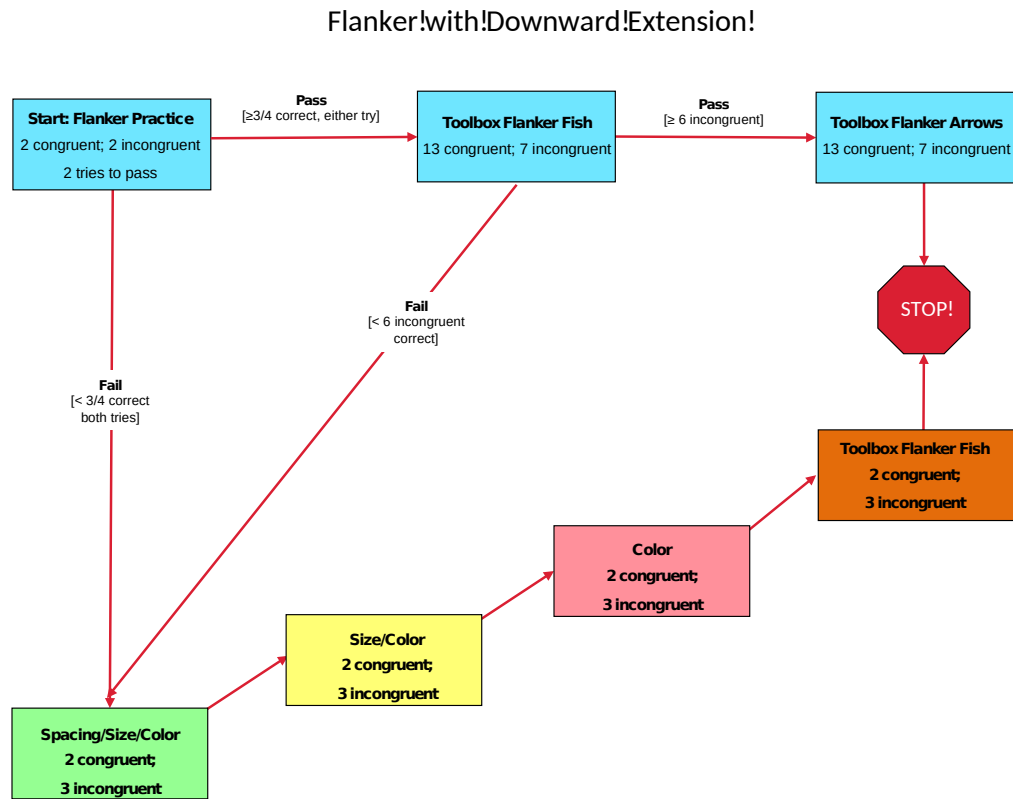
Practice Trials:

For all participants, there are four practice trials. If the participant responds incorrectly, the examiner prompts him/her to choose the correct button. If the participant does not respond after 5 seconds, prompt him/her to do so by saying, "**Choose one of the buttons.**"

The participant must get at least 3 out of 4 practice trials correct to advance to the test trials. If a participant gets fewer than 3 out of 4 practice trials correct, he/she will complete a second set of 4 practice trials, with the same criterion required to advance to the test trials. If the participant does not meet the criterion on the second set of practice trials, the downward extension (Dext) part of the task will begin.

The Dext setup is illustrated below. If a participant gets at least 3 out of 4 practice trials wrong on both sets of the Flanker Practice, or if they answer less than 6 incongruent trials correctly on the Toolbox Flanker Fish phase (after successfully passing the Flanker Practice), Dext begins. In Dext, the concept of a *middle* fish is highlighted through different colors of the middle versus the flanking fish, and an increase

in spacing between the middle and the flanking fish occurs, to help draw children’s attention to the middle fish. The color and the spacing gradually morph into the standard Flanker Fish, as illustrated below.



Test trials:

There is one block of 20 fish test trials for all participants. If a participant misses no more than 1 congruent and 1 incongruent trial, he/she will also receive a set of 20 arrow test trials.

The table below outlines the item content and the actions for the examiner:

Phase	Screen - written content	Examiner Action
PRACTICE Introduction	Here is a Fish! This is the TAIL -> [fish] <- This is the MOUTH The fish is pointing this way, the same way the fish is swimming.	Examiner points to the relevant parts on the screen and then touches the touch-and-hold button to advance to next screen.
	Here the MIDDLE fish is circled. Can you point to the MIDDLE fish?	Child points and examiner touches the

Phase	Screen - written content	Examiner Action
		touch-and-hold button to advance to next screen.
	Where is the MIDDLE fish here?	Child points and examiner touches the touch-and-hold button to advance to next screen.
	Look at all the fish!!! The fish in the MIDDLE is hungry.	Examiner touches the touch-and-hold button to advance to next screen.
	To feed the MIDDLE fish, choose the button that matches the way the MIDDLE fish is pointing.	Examiner demonstrates using the index finger.
	If the MIDDLE fish is pointing this way, choose this button.	Examiner demonstrates using the index finger.
	If the MIDDLE fish is pointing this way, choose that button.	Examiner demonstrates using the index finger.
	Sometimes all the fish face the same way. Sometimes the MIDDLE fish faces a different way from his friends, like this: [picture of incongruent fish] You should always choose the button that matches the way the MIDDLE fish is pointing. You will hear and see the word MIDDLE to remind you.	Examiner points and then chooses button.
	Here the MIDDLE fish is pointing this way, so I'll choose this button.	Examiner points and then chooses button.
	Here the MIDDLE fish is pointing this way, so I'll choose this button.	Examiner points and then chooses button.
Transition to practice items	Now you try. Keep your eyes on the star in the middle of the screen. Remember: put your finger back on HOME BASE after you answer.	Examiner touches the touch-and-hold button to advance to next screen.
	4 practice items for the participant.	
More practice, if needed.	Let's practice some more. If the MIDDLE fish is pointing this way, choose this button.	Examiner points and then chooses button.
	If the MIDDLE fish is pointing this way, choose that button.	Examiner points and then chooses button.
Transition to more practice items	Now you try. Keep your eyes on the star in the middle of the screen. Remember: put your finger back on HOME BASE after you answer.	Examiner touches the touch-and-hold button to advance to next screen.
	4 practice items for the participant.	
More practice, if needed.	Let's practice some more. If the MIDDLE fish is pointing this way, choose this button.	Examiner points and then chooses button.

Phase	Screen - written content	Examiner Action
	If the MIDDLE fish is pointing this way, choose that button.	Examiner points and then chooses button.
Transition to more practice items	Now you try. Keep your eyes on the star in the middle of the screen. Remember: put your finger back on HOME BASE after you answer.	Examiner touches the touch-and-hold button to advance to next screen.
More practice	4 practice items for the participant.	
Test Items transition	Now you're ready to do this without me. Keep your eyes on the star in the middle of the screen. Remember: put your finger back on HOME BASE after you answer.	Examiner touches the touch-and-hold button to advance to next screen.
Test items	20 items (fish)	
Introduction to additional test items if missed no more than 1 congruent and 1 incongruent trial	Now you will do the same thing, but you will see arrows instead of fish. Keep your eyes on the star in the middle of the screen. Remember: put your finger back on HOME BASE after you answer.	Examiner touches the touch-and-hold button to advance to next screen.
Additional test items	20 test items (arrows)	

Sample screenshot (fish):

