

## Attachment 20

Flanker

**Name of test:** Flanker  
**Estimated time burden:** 5 minutes  
**Estimated number of items:** up to 48

Materials:

Laptop  
Monitor  
Response device

Description:

The Flanker task 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, younger 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. The word *middle* appears on the screen and a prerecorded voice (ages 3-11 only) says "MIDDLE" to remind participants to focus on the MIDDLE stimulus. Older participants (8-85 years) are presented with arrows in place of fish. Participants are instructed to choose one of two "buttons" on the screen that corresponds to the direction in which the MIDDLE fish or arrow 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.*

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,

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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, the task will automatically terminate (i.e., will advance to the final screen).

There is one block of 20 test trials for all participants. If a participant age 3-7 achieves 90 percent correct on the fish trials, he/she will also receive a set of 20 arrow trials.

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

Ages 3-7	Participant's 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 participant's screen and then clicks CONTINUE on the examiner's screen.
	Here the MIDDLE fish is circled. Can you point to the MIDDLE fish?	Child points and examiner clicks CONTINUE on the examiner's screen.
	Where is the MIDDLE fish here?	Child points and examiner clicks CONTINUE on the examiner's screen.
	Look at all the fish!!! The fish in the MIDDLE is hungry.	Examiner clicks CONTINUE.
	To feed the MIDDLE fish, choose the button that matches the way the MIDDLE fish is pointing.	Examiner demonstrates using the index finger with the response device.
	If the MIDDLE fish is pointing this way, choose this button.	Examiner demonstrates response device.
	If the MIDDLE fish is pointing this way, choose that button.	Examiner demonstrates response device.
	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	Examiner points and then chooses button.

<b>Ages 3-7</b>	<b>Participant's screen written content</b>	<b>Examiner Action</b>
	matches the way the MIDDLE fish is pointing. You will hear and see the word MIDDLE to remind you.	
	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. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner 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. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner 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. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner screen.
Test items	20 items (fish)	
Introduction to additional test items if 90% success on fish	Now you will do the same thing, but you will see arrows instead of fish. Keep your eyes on the star. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner screen.
Additional test items	20 test items (arrows)	

<b>Ages 8-85</b>	<b>Participant screen written content</b>	<b>Examiner Action</b>
PRACTICE Introduction	In this task, you will see a row of arrows. You should choose the button that matches the way the MIDDLE arrow is pointing.	Examiner points to left arrow on the participant's screen and demonstrates the use of index

		finger to choose the correct arrow.
	If the MIDDLE arrow is pointing this way, choose this button	Examiner demonstrates response device.
	If the MIDDLE arrow is pointing this way, choose that button	Examiner demonstrates response device.
	Sometimes all the arrows face or point the same way. Sometimes the MIDDLE arrow faces or points a different way, like this [picture of incongruent arrows] You should always choose the button that matches the way the MIDDLE arrow is pointing. You will see the word MIDDLE to remind you.	Examiner demonstrates response device.
Transition to practice items	Now you try. Keep your eyes on the star. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner screen.
	4 practice items	
More practice, if needed	Let's practice some more. If the MIDDLE arrow is pointing this way, choose this button.	Examiner demonstrates response device.
	If the MIDDLE arrow is pointing this way, choose that button.	Examiner demonstrates response device.
Transition to more practice items	Now you try. Keep your eyes on the star. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner screen.
	4 practice items	
Test Items Introduction	Now you're ready to do this without me. Keep your eyes on the star. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	Examiner clicks CONTINUE on examiner screen.
Test items	20 items (arrows)	

Sample screenshot (fish):

Good! Let's practice some more. If the  
MIDDLE fish is facing this way,  
press this button.

