

Attachment 18

Dimensional Change Card Sort

Name of test: Dimensional Change Card Sort
Estimated time burden: 6 minutes
Estimated number of items: up to 56 items

Materials:

Laptop
Monitor
Response device

Description:

The *Dimensional Change Card Sort* was based on work by Zelazo and colleagues (2003) and is a measure of cognitive flexibility. Two target pictures are presented that vary along two dimensions (e.g., shape and color). Participants are asked to match a series of bivalent test pictures (e.g., yellow balls and blue trucks) to the target pictures, first according to one dimension (e.g., color) and then, after a number of trials, according to the other dimension (e.g., shape). The relevant dimension for sorting is indicated by a cue word (e.g., “shape” or “color”) that appears on the screen and, for younger children, is spoken by a prerecorded voice. Practice items use white and brown colors and a Rabbit and a Sailboat as shapes. Test items used blue and yellow colors and a Ball and a Truck as shapes.

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. The next screen appears when either the examiner or participant makes a choice on the screen.

Practice Trials:

The participant is given four practice trials with each dimension. If the participant responds incorrectly, prompt him/her to choose the correct image. If the participant does not respond after 5 seconds, the examiner should prompt him/her to do so by saying, **“Choose one of the pictures.”**

Public reporting burden for this collection of information is estimated to average 2 1/2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-xxxx*) EXP: (xx/xxxx). Do not return the completed form to this address.

The participant must get at least 3 out of 4 practice trials correct in order to advance to the test trials.

If the 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 cutoff in order to advance to the test trials. If the participant does not meet the cutoff, the task will automatically terminate (i.e., will advance to final screen).

Test Trials:

The examiner should not prompt the participant to respond during the test trials. If the participant does not respond after 10 seconds, the program will automatically advance to the next test trial.

During the test trials, 3-7 year olds first complete a set of 5 trials sorting according to color. If these participants succeed in 4 of the 5 test trials, the program advances to a set of 5 trials sorting according to shape. If these participants do not get 4 out of 5 test trials correct, the program will automatically terminate. If these participants meet criterion on the second set, they will then complete the mixed block, consisting of 30 shape/color trials.

Participants 8 - 85 years of age complete a mixed block of items consisting of 30 shape/color trials.

This table outlines the item content of the practice and test items as well as the actions for the examiner:

All Ages Practice	Participant's screen written content	Examiner Actions
Practice-Intro all ages	We're going to play a matching game with colors and shapes.	Clicks CONTINUE on examiner screen.
SHAPE intro	We'll play the SHAPE game first. In the SHAPE game, choose the picture that's the same SHAPE as the picture in the middle of the screen. If it's a BOAT, choose this picture.	Examiner points to BOAT and then demonstrates the use of the index finger on the arrow.
	If it is a RABBIT, choose that picture.	Examiner points to RABBIT and then demonstrates response device.
Transition	Now you try.	Clicks CONTINUE

All Ages Practice	Participant's screen written content	Examiner Actions
	Keep your eyes on the star. Answer as fast as you can without making mistakes. If you make a mistake, just keep going.	on examiner screen.
Shape Practice	4 items sorted by shape	
More practice, if needed- all ages	Let's practice that some more. In the SHAPE game, choose the picture that's the same SHAPE as the picture in the middle of the screen. If it's a BOAT, choose this picture.	Chooses BOAT.
	If it's a RABBIT, choose that picture.	Chooses RABBIT.
Transition	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.	Clicks CONTINUE.
Shape Practice again- all ages	4 items sorted by shape	
COLOR intro	We can also match by COLOR. In the COLOR game, choose the picture that's the same COLOR as the picture in the middle of the screen. If it's BROWN, choose this picture.	Examiner points to and then chooses BROWN picture.
	If it's WHITE, choose that picture.	Examiner points to and then chooses WHITE picture.
Transition	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.	Clicks CONTINUE on examiner screen
Color Practice all ages	4 items sorted by color	
More practice, if needed- all ages	Let's practice some more. In the COLOR game, choose the picture that is the same COLOR as the picture in the middle of the screen. If it's WHITE, choose this picture.	Chooses WHITE picture.
	If it's BROWN, choose that picture.	Chooses BROWN picture.
Transition	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.	Clicks CONTINUE on examiner screen.
Color Practice	4 items sorted by color	

All Ages Practice	Participant's screen written content	Examiner Actions
again- all ages		

Ages 3-7 Test	Participant's screen written content	Examiner
Pre-switch intro ages 3-7	Let's start with the COLOR game. Remember the COLOR game? In the COLOR game, choose the picture that's the same COLOR as the picture in the middle of the screen. If it's a BLUE one, choose this picture.	Chooses BLUE picture.
	And if it's a YELLOW one, choose that picture.	Chooses YELLOW picture.
Transition	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.	Clicks NEXT on examiner screen.
Color items— ages 3-7	5 items sorted by color (repeated with pre-switch intro if child does not get 4 of 5 correct)	
Post-switch intro ages 3-7	Now we're going to play the SHAPE game. Remember the SHAPE game? In the SHAPE game, choose the picture that's the same SHAPE as the picture in the middle of the screen. If it's a TRUCK, choose this picture.	Chooses TRUCK.
	And if it's a BALL, choose that picture.	Chooses BALL.
Transition	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.	Clicks CONTINUE on examiner screen.
Shape items- ages 3-7	5 items sorted by shape (repeated with pre-switch intro if child does not get 4 of 5 correct)	
Intro Mixed Items Ages 3-7	We can also play both games together. Remember, when you see or hear the word SHAPE, choose the picture that's the same SHAPE as the picture in the middle of the screen. If it's a TRUCK, choose this picture.	Chooses TRUCK.
	And if it's a BALL, choose that picture.	Chooses BALL.
	When you see or hear the word COLOR, choose the picture that's the same COLOR as the picture in the middle of the screen. If it's a BLUE one, choose this picture.	Chooses BLUE picture.
	And if it's a YELLOW one, choose that picture.	Chooses YELLOW picture.

Ages 3-7 Test	Participant's screen written content	Examiner
	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.	Clicks CONTINUE on examiner screen.
Test items	30 mixed items	

8-85 Test	Participant's screen written content	Examiner Actions
Test item intro-ages 8-85	Now, we're going to play both games together. Remember, when you see the word SHAPE, choose the picture that's the same SHAPE as the picture in the middle of the screen. When you see the word COLOR, choose the picture that's the same COLOR as the picture in the middle of the screen.	Clicks CONTINUE on examiner screen.
Transition	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.	Clicks CONTINUE on examiner screen.
Test items ages 8-85	30 mixed items	

Sample screenshot:

