

Appendix B

Description of Ability Measures Used in Study 3

The verbal and spatial test of each factor were isomorphic, with differences only in the items presented on the screen (i.e., words vs. stick figures). Therefore, only descriptions of either the spatial or verbal test are included here.

Working-Memory Capacity Verbal: Four-Term Ordering

This test requires participants to produce the order of four items from three statements presenting partial information regarding the order of the items. The four items are divided into two categories of two items each. One statement describes the relative ordering of the two categories. The second and third statements describe the order of the items with each category. For example,

The ANIMALS come after the FURNITURE.
The cow does not come before the bird.
The chair does not come after the lamp.

After the three statements are presented, participants are given 15 s to select the correct order from eight numbered alternatives appearing on the screen. The correct response for this example is *chair lamp bird cow*. Participants are given feedback for incorrect responses and are allowed to review the three sentences and alternative answers. This test contains 24 items.

Processing Speed Verbal: Two-Term Ordering

Participants must decide as quickly as possible whether two presented words conform to the order specified in a sentence at the top of the screen. The sentences are presented first and either state that Word A will be before Word B or that Word A will be after word B (e.g., The bird comes before the cow). The two words are then presented in the middle of the screen. Participants are to respond as quickly as possible by typing *L* if the word order matches the sentence and *D* if it does not. This test contains 12 items.

Fact Learning Spatial: Figures Recognition

Participants are required to memorize 12 geometrical figures in a 3×4 matrix and then to determine whether individually presented figures were in that matrix. Participants are given 60 s to study the figures. During a practice test, participants are given the hint to try to make associations with what the figures may resemble (e.g., a letter, a flag). Immediately after study, participants are shown individual figures and asked whether each was one studied. There are two sets of figure matrices, with 26 recognition test items per set.

Procedural Learning Spatial: Reduction of Circles

Participants are presented two circles that must be combined to form one circle, using the following rules:

Rule 1

If both circles are solid (i.e., each are either entirely white or entirely black), then the combined circle will keep the black parts of both circles. For example, if one circle is solid black and the other is solid white, then the result is a solid black circle.

Rule 2

If either circle is a mix, then the combined circle will keep the white parts of both circles. For example, if one circle is solid black and the other is black on the left half and white on the right half, the result is a circle with the right half white. Participants choose the answer from four numbered alternatives presented at the bottom of the screen. This contains 96 items.

Inductive Reasoning Spatial**Figure Sets**

Participants are presented with three sets of figures. Two of the sets will be related according to various themes. Participants must determine which set is the odd set. Some of the various patterns include the following: figures formed with straight lines as opposed to curved lines, internal shading versus no shading, and so on. There are 10 items that must be solved within a 5-min period.

Figure Series

Participants are shown a series of shapes at the top of the screen and must choose the next shape occurring in the series from three numbered alternatives. For example, if the series was **///_*, the answer would be ****. There are 10 problems that must be solved within a 5-min period.

Figure Matrices

Participants are shown a 3×3 matrix in which a figure is contained in all but one of the cells. There are patterns or rules that apply across and down the figures that must be induced to decide what figure belongs in the empty cell. The matrix and eight alternatives responses are shown on the screen simultaneously. Some of the rules and patterns used are as follows: gradual shading of figures, successive additions or deletions to figures, rotation of figures, and so on. There are nine problems that must be solved within a 10-min period.

Received August 12, 1997

Revision received January 12, 2000

Accepted February 5, 2000 ■