

Test Protocol Booklet

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Executive Function Performance Test

Carolyn M. Baum, Tracy Morrison,
Michelle Hahn, Dorothy F. Edwards

Program in Occupational Therapy
Washington University School of Medicine
St. Louis, MO
USA

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Preface

The Executive Function Performance Task was developed at the Program in Occupational Therapy at Washington University Medical School in St. Louis, MO. The Kitchen Task Assessment (KTA), an earlier functional assessment test designed by Carolyn Baum and Dorothy Edwards (1993), was used as the prototype in developing the EFPT. Like its predecessor, the EFPT is used to provide a performance-based standardized assessment of cognitive function (Baum and Edwards, 1993).

Generally, traditional neuropsychological tests follow a bottom-up approach to analyzing brain function: the tests gather information about specific aspects of cognition, such as memory, attention, or planning (Duchek, 1997). Although this micro-level assessment gives an accurate depiction of specific cognitive impairments, the relationship between components of cognition and overall functional ability is unclear. Conversely, the EFPT takes a macro-level view of cognition: functioning as a whole is examined as individuals perform an entire task. It cannot be assumed that an impairment in a cognitive process will result in an impairment in overall functional capacity (Abreu et al., 1994*h*, Lowenstein et al., 1995). Therefore, it is unwise to base an intervention strategy solely on the results of a neuropsychological battery, which may be insufficient to determine an individual's overall ability to function. The results of the bottom-up tests should be supplemented with top-down functional assessments. More insightful interventions can be created with a combination of these two assessment strategies.

The EFPT, a top-down functional assessment test, was designed to examine total cognitive integration and functioning in an environmental context. The EFPT specifically examines executive functions. **Executive functions** are a group of cognitive processes which mediate goal-directed activity (Kaye et al., 1990; Stuss, 1992). Thus executive functions are involved in task execution.

The EFPT serves three purposes:

- (1) to determine which executive functions are impaired.
- (2) to determine an individual's capacity for independent functioning.
- (3) to determine the amount of assistance necessary for task completion.

Unlike other tests of function, the EFPT *does not* examine what individuals cannot do. Rather, it identifies what they can do, and how much assistance is needed for them to carry out a task. The EFPT does not simply discriminate between individuals who can do the test and those who cannot. By using a cueing system, a wider range of abilities are captured in people previously thought to be untestable. This cueing system is standardized and associates

with the degree of cognitive impairment. Finally, the cueing system gives the tester a straightforward assessment of required assistance.

The EFPT examines the execution of four basic tasks that are essential for self-maintenance and independent living: simple cooking, telephone use, medication management, and bill payment. The EFPT assesses an individual's ability to complete the following components of the task (an elaboration of definitions is given in Table 1):

- initiation of task
- execution of task (requiring organization, sequencing, and judgment and safety)
- completion of task

During each task, cognitive functions fluidly interact and co-occur. The rater observes task performance, focusing specifically on executive functions. The level of cueing necessary to support task performance is recorded as a score. Thus, the score reflects the participant's capacity for executive functioning that has been observed during performance of each task. For example, if the individual is unable to initiate the task, the rater can determine that the executive function underlying initiation is defective and plan a strategy to address this deficit.

Steps are the discrete movements which, cumulatively, comprise an action. Actions, in turn, are combined to perform the task (Christiansen and Baum, 1997, p. 57). For example, an individual will reach for a spoon, grasp it, pick it up, place it in the oatmeal, and move it in a circular motion (the steps) in order to stir oatmeal (the action). At a fundamental level, the execution of a task requires the ability to correctly sequence and attend to steps, as well as the abilities to organize tools and utilize judgment to ensure safety. These requirements must be met in order for successful task completion.

Initiation, execution, and completion have been operationally defined to guide the development of this test. Using these definitions, the rater is able to analyze the executive functions that mediate each task. Accordingly, the EFPT allows the rater to observe how executive functioning is impaired in the individual, and the type and amount of help needed to maintain self-sufficiency can be ascertained and shared with caregivers.

The EFPT is a formal cognitive test which requires strict adherence to testing protocol. **There should be no modifications of the instructions.** Any deviation from standard testing procedure will decrease validity. In order to avoid bias, the rater must not form preconceived ideas about the participant's capacity to perform the tasks. **All test items must be administered regardless of the participant's preferences or experiences towards/with task items. The EFTP was designed to accommodate all levels of functioning and to establish the levels of support needed for a range of tasks. Therefore, all participants can be**

scored on this measure, especially because it is possible to score when physical assistance is provided and when the person is not able to perform the task.

Table 1

Executive Function Component	Definition	Expected Behavior
Initiation	the advent of motor activity that commences a task (DePoy et al., 1990; Kaye et al., 1990; Weld & Evans, 1989).*	The individual moves to the materials table to collect items needed for the task.
Execution	the proper completion of each step, consisting of three requirements: organization, sequencing, and safety and judgment (see below).	The individual carries out the steps of the task without incident.
• Organization	the physical arrangement of the environment, tools, and materials to facilitate efficient and effective performance of steps (Weld & Evans, 1990).	The individual correctly retrieves and uses the items that are necessary for the task.
• Sequencing	the coordination and proper ordering of the steps that comprise the task, requiring a proper allotment of attention to each step (Lezak, 1989).	The individual carries out the steps in an appropriate order, attends to each step appropriately, and can switch attention from one step to the next.
• Judgment and Safety	the employment of reason and decision-making capabilities to intentionally avoid physically, emotionally, or financially dangerous situations.	The individual exhibits an awareness of danger by actively avoiding or preventing the creation of a dangerous situation.
Completion	the inhibition of motor performance driven by the knowledge that the task is finished (Baum and Edwards, 1993).**	The individual indicates that he/she is finished or moves away from the area of the last step.

* It is important to make the distinction between a motor action that begins the task and a motor action that precedes the task. An excess of the latter is considered "self-regulation deficit," a dissociation between intention and action. In this case, the individual will talk about a task or make gesticulations that resemble movements needed later in the task (e.g., stirring motion, hand wringing), but he or she will not carry out the task (Lezak, 1989).

** Two cognitive factors may contribute to difficulty in completing a task: (1) an inability to disengage attention from the final step, i.e., acknowledgment that the task is complete, or (2) perseveration, an inability to disengage motor response from the task (Lezak, 1989). Both factors may lead to a persistence in continuing the task.

Cueing Guidelines:

- Unless the participant is in danger (e.g., putting the pitcher of water down where it could fall off the table and break, putting a hot pad on the burner, touching the burner to see if it is on, placing their sleeve in the fire, etc.), do not intervene until the participant shows he/she is struggling with the next step.
- If the person has difficulty with any aspect of any of the tasks, you must wait at least 10 seconds (to observe processing) before giving the participant a cue.
- Give two cues of each kind before progressing to the next cueing level.
- Give cues progressively (see below) from verbal guidance → gestural guidance → direct verbal assistance → physical assistance. If the participant is still unable to perform a step in a task, the examiner should do the step for him/her, then the participant should be cued back to the next sequential step of the task.
- You will often find yourself combining different levels of cues. The score of your degree of assistance must reflect the highest level of cue used to get the task done.
- Do not initiate conversations during the test, and do not “cheer lead,” i.e., do not give positive or negative feedback.

Cueing Descriptions:

No Cues Required: The participant requires no help or reassurance, does not ask questions for clarification, goes directly to the task and does it. Self-cueing is acceptable. Ex. speaking to oneself

Indirect Verbal Guidance: The person requires verbal prompting, such as an open-ended question or an affirmation that will help them move on. Indirect verbal guidance should come in the form of a question, not a direct instruction, e.g.: “What should you do now?”; “What is the next step?”; “What else do you need?” **Avoid** direct phrases such as “read the instructions” or “turn on the stove.”

Gestural Guidance: The person requires gestural prompting. At this level, you are not physically involved with any portion of the task. Instead, you should make a gesticulation that mimics the action that is

necessary to complete the subtask, or make a movement that guides the participant, e.g., you may move your hands in a stirring motion, point to where the participant may find the item, point to the appropriate level on the measuring cup, etc. You may not physically participate, such as handing the participant an item.

Direct Verbal Assistance:

You are required to deliver a one-step command, so that you are cueing the participant to take an the action. For example, say, "pick up the pen" or "pour the water into the pan."

Physical Assistance:

You are physically assisting the participant with the step, but you are not doing it for him/her. You may hold the cup while he/she pours, hold the check book while he/she writes, loosen the cap on the medicine container, etc., but the participant is still attending to and participating in the task.

Do for the Participant:

You are required to do the step for the participant.

Frequently asked questions:

How do you deal with a cuing family member? How do you score if the family member "jumps in"?

Prior to starting the test tell the family member that they may observe but that they may not make comments or come into the area where the testing is being performed. Note: In my experience it is often helpful for the family member to observe what it takes for the person to perform the task. But they should not interfere. If they do, stop the test and ask them to leave the area.

How do you score if a client refuses to do one subtest?

You have told them in the beginning that these are tests and that they may or may not do them in their own daily lives. Take the time to explain that it is important to have information on all of the tests and use your persuasion to help them proceed. Ask them if they want to do another test before coming back to the one that they are not anxious to do.

How do I differentiate physical assistance because of a motor deficit vs. physical assistance from a cognitive deficit?

This requires clinical reasoning on the part of the administrator. You may ask the person to tell you what they need you to do to help them with the task because of a physical limitation. You do not record it as needing physical assistance because they knew what to do and asked you to help them.

EFPT Supplies Needed

All of these items are in a box, placed on a surface. The person needs to obtain the items they need for the task and place them outside of the box before beginning the task.

- Hand soap in dispenser (as one would find in a home)
- Towel
- Pan (with handle that gets hot and requires a pot holder)
- Pot holder
- Measuring cup (glass) – 1 cup
- Dry measuring cups
- Spoon for stirring
- Rubber spatula
- Old-fashioned Oats
- Enlarged copy of the instructions for the stovetop version only
- Bowl
- Spoon for eating
- Salt shaker
- Timer – a timer with a dial rather than a digital timer
- Pencil
- Paper
- Phone book
- Magnifying Glass
- Medicine bottle with instructions on it- with the person's name on it – filled with sugar-free candy
- Medicine bottle as a distractor (another person's prescription) – filled with sugar-free candy
- Claritin bottle (non prescription) as a distractor – filled with sugar-free candy
- Drinking cup
- Two bills (one cable, one phone with pre addressed envelopes) mixed with 5 other pieces of mail (letter from credit card company, postcard, flier, letter in a plain white envelope, mail order catalog.) in a Ziploc bag
- Checks
- Balance sheet (i.e., account book) with a balance \$5.00 less than the bills total
- Pen
- Calculator
- Other distractor items:
 - Tongs
 - Pepper shaker
 - Restaurant / apartment guide
 - Catalog

PRETEST CHECKLIST

All necessary items are in box (as indicated above)	
New check registry has been placed in checkbook	
Balance is indicated in check registry	
Pill bottle is labeled with subjects name	
Envelopes have return address labels	

Directions for the EFPT

The tasks should be carried out in the following order*:

- Hand Washing** (Score Sheet A) Only use if person has severe cognitive impairment and you want to see if they can follow directions. If they cannot do the task do not proceed with administration. We do not score the handwashing task when reporting the scores in analysis.
- Oatmeal Preparation (Score Sheet B)
- Telephone (Score Sheet C)
- Taking Medication (Score Sheet D)
- Paying Bills (Score Sheet E)

*If the participant refused to do a particular task (except the hand washing), the task can be skipped and done later.

**If the participant is fully unable to complete the hand washing task (i.e., has the assistance level of "Do for the Participant") *do not* proceed with the other tasks. Inability for the participant to follow directions or take cues will cause failure and unnecessary duress on all subsequent tasks. Therefore, testing must stop at this point.

1. Begin the EFPT with the script and the pre-task questions.
2. Leave all of the items necessary for all of the tasks ***in the box on a table*** (the "materials table").
Bills and mail should be mixed together in a Ziploc bag. The account/check book should have checks included inside. All other items are loose in the box.]
3. Ask the person to begin the task (e.g., "I want to see you make oatmeal.")

4. Offer assistance only after the participant has made a good attempt to process the actions necessary to carry out the step. The cueing guidelines should be used.
5. Complete the cueing chart and behavior assessment chart for each task.

Script

“Today I’ll be asking you to wash your hands, make some oatmeal, use the telephone, take some “fake” medication, and pay some “fake” bills. You may not be doing these tasks at home, but they have been selected for this test as representing those most like daily tasks. If you need help at any point in this test, let me know”.

*“All the items you need to do these tasks are here in the box (**show it to them**). I want to know a few things about you before I begin the testing, so I’m going to ask you a few questions. Please answer them as best as you can. This card should guide your responses (**show the participant the response card and read directly from it**).*

Pre-Test Questions

Will you be able to wash your hands?

0= by yourself.

1= with verbal guidance

2= with physical assistance

3=I won’t be able to do this task

Do you cook? 1= Yes 2= No

Do you use the stove to cook meals?

1= Yes 2= No

Have you recently made oatmeal on the stove? 1= Yes 2= No

Will you be able to make oatmeal?

0= by yourself.

1= with verbal guidance

2= with physical assistance

3=I won’t be able to do this task

Do you use the phone on a regular basis?

1= Yes 2= No

How many times a week do you use the phone? _____

What is the phone number you call in an emergency? _____

1= correct 2= incorrect

Will you be able to make a phone call . . .

0= by yourself.

1= with verbal guidance

2= with physical assistance

3=I won’t be able to do this task

Do you take medication? 1= Yes 2= No

Can you show me where you keep your medications? 1= Yes 2= No

When do you take your medicine?

1=morning

2=afternoon

3=evening

4=before bed

5=more than once a day

Will you be able to take medicine?

0= by yourself.

1= with verbal guidance

2= with physical assistance

3=I won’t be able to do this task

Do you pay your bills? 1= Yes 2= No

Does someone help you with your bills?

1= Yes 2= No

Will you be able to pay these bills?

0= by yourself.

1= with verbal guidance

2= with physical assistance

3=I won't be able to do this task

*****Ensure that the working spaces are cleared of other items (for example, the kitchen counter top and stove should be free of objects)**

EXECUTIVE FUNCTION PERFORMANCE TEST

Task: Hand washing

Items required for task:

- Hand soap in dispenser (as one would find in a home)
- Towel

Commence Task:

“I want to see you wash your hands with soap. The items you will need are in the box.”

Executive Function Performance Test (EFPT): Form A

TASK: Hand Washing	Independent 0	Verbal Guidance 1	Gestural Guidance 2	Verbal Direct Instruction 3	Physical Assistance 4	Do For Participant 5	Score
INITIATION: <i>beginning the task.</i>							
Upon your request to start, participant moves to table to gather tools/materials for washing hands.							—
EXECUTION: <i>carrying out the actions of the task through the use of organization, sequencing, and judgment.</i>							
Organization: <i>arrangement of the tools/materials to complete the task.</i> Participant retrieves the items needed (hand soap, towel).							—
Sequencing: <i>execution of steps in appropriate order.</i> Participant performs steps in appropriate sequence, e.g., turns on water, picks up soap, lathers hands, rinses hands, turns off water, reaches for towel, and dries hands. Participant does not confuse steps, e.g., dries hands before washing them, uses soap before hands are wet, etc.							—
Judgment & Safety: <i>avoidance of dangerous situation.</i> Participant prevents or avoids danger, e.g., water temperature is not scalding, avoids water spills on the floor, does not eat soap, etc.							—
COMPLETION: <i>termination of task.</i>							
Participant knows he/she is finished, e.g., stops drying hands/turns off water.							—

Total Score _____

EXECUTIVE FUNCTION PERFORMANCE TEST

Task: Simple Cooking

Items required for task:

- Pan (with handle that gets hot and requires a pot holder)
- Pot holder
- Measuring cup (glass) – 1 cup
- Dry measuring cups
- Spoon for stirring
- Rubber spatula
- Old-fashioned Oats
- Enlarged copy of the instructions for the stovetop version only
- Bowl
- Spoon for eating
- Salt shaker
- Timer – a timer with a dial rather than a digital recording

Commence Task:

“I want you to make oatmeal. Here is an enlarged version of the instructions (hand to participant). Follow these directions and when you are done, put the oatmeal in a bowl. The items you need are in the box.”

Note: The participant should not be penalized if he/she does not clean the bowl or pan.

Executive Function Performance Test (EFPT): Form B

TASK: Simple Cooking	Independent 0	Verbal Guidance 1	Gestural Guidance 2	Verbal Direct Instruction 3	Physical Assistance 4	Do For Participan t 5	Score
INITIATION: <i>beginning the task.</i>							
Upon your request to start, participant moves to table to gather tools/materials for making oatmeal.							_____
EXECUTION: <i>carrying out the actions of the task through the use of organization, sequencing, and judgment.</i>							
Organization: <i>arrangement of the tools/materials to complete the task.</i> Participant retrieves the items needed (pan, pot holder, measuring cup, oats, instructions, spoon).							_____
Sequencing: <i>execution of steps in appropriate order.</i> Participant performs steps according to the directions participant measures water, puts water into pan, turn on stove, sets heat according to what is needed, boils water, measures oats, puts oats into boiling water, stirs, turns off stove, uses pot holder to lift hot pan, and pours oats into bowl. Participant does not confuse steps, e.g., turns off stove before water boils, replacing oats in cupboard before measuring some out, but may measure oats before boiling the water or put salt in the water before or as it boils.							_____
Judgment & Safety: <i>avoidance of dangerous situation.</i> Participant prevents or avoids danger, e.g., turns water off, does not lay pot holder near burner, turns burner off, uses pot holder to lift hot pan, etc.							_____
COMPLETION: <i>termination of task.</i>							
Participant knows he/she is finished, e.g., pours oatmeal into bowl and moves away from pot. If participant washed dishes, he/she moves away from the sink, doesn't continue to scrape the pan, etc.							_____

Total Score _____

EXECUTIVE FUNCTION PERFORMANCE TEST

Task: Using the Telephone

Items required for task:

- Pencil
- Paper
- Phone book
- Magnifying Glass

Commence Task:

“I want you to look up a local grocery store in the phone book, telephone them, and ask them if they deliver groceries. Let me know what you find out. The items you need are in the box.”

Executive Function Performance Test (EFPT): Form C

TASK: Using the Telephone	Independent 0	Verbal Guidance 1	Gestural Guidance 2	Verbal Direct Instruction 3	Physical Assistance 4	Do For Participant 5	Score
INITIATION: <i>beginning the task.</i>							
Upon your request to start, participant moves to table to gather tools/materials for making a phone call.							—
EXECUTION: <i>carrying out the actions of the task through the use of organization, sequencing, and judgment.</i>							
Organization: <i>arrangement of the tools/materials to complete the task.</i> Participant retrieves the items needed (phone book, pencil, paper).							—
Sequencing: <i>execution of steps in appropriate order.</i> Participant performs steps in appropriate sequence, e.g., looks up number, lifts receiver, dials number, reaches correct number, and tells you the correct answer. Participant does not confuse steps, e.g., dials number before looking it up, hangs up receiver in middle of dialing, puts away phone book instead of looking up number, etc.							—
Judgment & Safety: <i>avoidance of dangerous situation.</i> Participant prevents or avoids danger, e.g., dials the correct number, reports information accurately to you, replaces receiver on hook so phone can be used, etc.							—
COMPLETION: <i>termination of task.</i>							
Participant knows he/she is finished, e.g., hangs up phone and does not continue pushing buttons.							—

Total Score _____

EXECUTIVE FUNCTION PERFORMANCE TEST

Task: Taking Medication

Items required for task:

- Medicine bottle with instructions on it- with the person's name on it – filled with sugar-free candy
- Medicine bottle as a distractor (another person's prescription) – filled with sugar-free candy
- Claritin bottle (non prescription) as a distractor – filled with sugar-free candy
- Drinking cup
- Magnifying Glass

Commence Task:

“I need you to pretend you have a prescription in the box. Find your prescription and do what the instructions tell you to do. The pills in the bottle are safe--they are sugar-free candy.”

After they take the drug, ask the following questions in order to rate judgment and safety:

- ***“What times during the day are you supposed to take this medicine?”***
-

- ***“What are you supposed to take with this medicine?”***
-

- ***“What do you need to be careful of when you take this medicine?”***
-

Note: it is OK if they chew the pill.

Executive Function Performance Test (EFPT): Form D

TASK: Taking Medication	Independent 0	Verbal Guidance 1	Gestural Guidance 2	Verbal Direct Instruction 3	Physical Assistance 4	Do For Participant 5	Score
INITIATION: <i>beginning the task.</i>							
Upon your request to start, participant moves to table to gather tools/materials for taking medication.							_____
EXECUTION: <i>carrying out the actions of the task through the use of organization, sequencing, and judgment.</i>							
Organization: <i>arrangement of the tools/materials to complete the task.</i> Participant retrieves the items needed (medicine bottle, instructions, pills, glass).							_____
Sequencing: <i>execution of steps in appropriate order.</i> Participant performs steps in appropriate sequence, e.g., reads the directions on the pill bottle, opens pill bottle, pours pills into hands or onto table, chooses correct number of pills according to prescription, puts unused pills back into bottle, puts pills into mouth, swallows, and puts cap back on bottle. Participant does not confuse steps, e.g., puts cap on before takes pills out and counts them, drinks all the water before puts pills into mouth, etc.							_____
Judgment & Safety: <i>avoidance of dangerous situation.</i> Participant prevents or avoids danger, e.g., takes correct pills, counts and takes correct number of pills, doesn't put water too near to the edge of table, doesn't pour water outside of the cup, etc.							_____
COMPLETION: <i>termination of task.</i>							
Participant knows he/she is finished, e.g., moves away from the task, doesn't open pill bottle and play with pills, etc.							_____

Total Score _____

EXECUTIVE FUNCTION PERFORMANCE TEST

Task: Paying Bills

Items required for task:

- Two bills (one cable, one phone) mixed with 5 other pieces of mail (letter from credit card company, announcement of a sale, etc.) in a Ziploc bag
- Checks
- Balance sheet (i.e., account book) with a balance \$5.00 less than the bills total
- Pen
- Calculator

Commence Task:

“I want you to take what you need to pay the bills out of the bag, find the bills, pay them, and balance the account. These are fake bills and this is not your account but I need you to pretend that these are your bills and your account as this is part of the assessment.”

Note: use of the calculator is not mandatory.

Executive Function Performance Test (EFPT): Form E

TASK: Paying Two Bills	Independent 0	Verbal Guidance 1	Gestural Guidance 2	Verbal Direct Instruction 3	Physical Assistance 4	Do For Participant 5	Score
INITIATION: <i>beginning the task.</i>							
Upon your request to start, participant moves to table to gather tools/materials for paying two bills.							—
EXECUTION: <i>carrying out the actions of the task through the use of organization, sequencing, and judgment.</i>							
Organization: <i>arrangement of the tools/materials to complete the task.</i> Participant retrieves the items needed (pen, checkbook, bills, envelope, stamp).							—
Sequencing: <i>execution of steps in appropriate order.</i> Participant performs steps in appropriate sequence, e.g., locates the bill, checks the balance, writes the check for the correct amount, puts check into envelope and addresses it, puts stamp onto envelope and seals it, locates second bill, checks balance, etc. Participant does not confuse steps, e.g., writes check before checking the balance, seals envelope before putting check in, puts check into envelope before signing it, etc.							—
Judgment & Safety: <i>avoidance of dangerous situation.</i> Participant prevents or avoids danger, e.g., makes check out in the correct amount and signs it, writes correct address, subtracts check amount from the balance, doesn't write second check (or indicates in some way that there are insufficient funds in the account to write the second check), etc.							—
COMPLETION: <i>termination of task.</i>							
Participant knows he/she is finished, e.g., puts down the checkbook, doesn't continue writing checks or fussing with the bills or checkbook, etc.							—

Total Score _____

To Score the test: Total all Initiation, Total all Organization, Total All Sequencing, Total All Judgment & Safety, Total All Completion to see the area of most concern, then make a grand total.

SCORING THE EFPT

The highest level of cueing necessary to support the performance of the four instrumental tasks (handwashing is not scored as it is a screening tool) is recorded; thus, the test results in three scores, the executive function (EF) component score, the task score, and a total overall score. The EF component score is calculated by summing the numbers recorded on each of the four tasks for initiation, organization, sequencing, judgment and completion. Each EF component can range from 0 to 5 with a total of all four tasks ranging from 0-20. The second score is the task score; this is calculated by summing the five scores for each task. The range for each task is 0 to 25. The total score is the sum of the performance on all four tasks with a total score of performance on all four tasks that can range from 0 to 100.

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