



## Behavioral Inventory Measure of Executive Functions - Adolescence version: BIMEFs - Ado

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### Instruction

Please check the box corresponding to the statement that best describes you.

This questionnaire consists of 2 parts as follows:

Part 1: General information about participants

Part 2: Behavioral Inventory of Executive Functions

It takes approximately 15 minutes to complete the questionnaire.

In the past 6 months, how often you have had the following behavior?

Please answer every question by selecting the answer that best describes your behaviors.

1	=	Never
2	=	Sometimes
3	=	Frequently
4	=	Always.

### Part 1 General Information

Please place the check mark (✓) at the box  that matches with your current status.

1. Gender  Male  Female

2. What year of the program are you currently studying?

<input type="checkbox"/> 1/.....	<input type="checkbox"/> 2/.....	<input type="checkbox"/> 3/.....
<input type="checkbox"/> 4/.....	<input type="checkbox"/> 5/.....	<input type="checkbox"/> 6/.....
<input type="checkbox"/> Others .....		

3. Grade point average (GPA)

$\leq 2.75$    $2.76 - 3.00$    $3.01-3.50$    $\geq 3.51$

4. Do you have congenital disorders?

No  
 Yes, please specify .....

## Part 2: Behavioral Inventory of Executive Functions

	<b>In the past 6 months, how often you have had the following behavior?</b>	<b>Never</b>	<b>Sometimes</b>	<b>Frequently</b>	<b>Always</b>
1.	I can stop distracting thoughts while having a conversation with others.	1	2	3	4
2.	Even though thoughts about other things might pop up while working on a report, I can stop those thoughts.	1	2	3	4
3.	I can focus on the present.	1	2	3	4
4.	When biking or driving, I am able to focus on the road and not be distracted.	1	2	3	4
5.	Even though there is a disruptive question or comment while I am presenting my classwork, I can continue and smoothly present my classwork.	1	2	3	4
6.	I can focus on what someone is saying to me even when the environment is very noisy.	1	2	3	4
7.	I can continue to concentrate on reading a book even when a TV program comes on.	1	2	3	4
8.	I focus on the workload that I am working on without letting noise in the room bother me.	1	2	3	4
9.	If someone says or does something that hurts me, I am able to resist doing something unkind to that person.	1	2	3	4
10.	I do not interrupt while others are speaking.	1	2	3	4
11.	I patiently wait to buy the products I want until they are available at a lower price.	1	2	3	4
12.	I think and ponder before speaking or acting.	1	2	3	4
13.	I do not try to butt ahead in line.	1	2	3	4
14.	Even though something might be a lot harder and take a lot longer than I expected, I keep at it until it is finished.	1	2	3	4
15.	If I am determined to do something, then I have to accomplish it.	1	2	3	4
16.	I do what I am supposed to do, even if I don't want to.	1	2	3	4
17.	I am able to mentally put information I hear in the correct and sequential order.	1	2	3	4
18.	I can mentally calculate whether I have enough money to purchase all the items I might want to buy.	1	2	3	4
19.	I am good at relating what I am learning now to other things I learned earlier.	1	2	3	4
20.	If I have a question or comment, I can follow the ongoing conversation or lecture and still remember what I was going to say when the time comes to say or ask it.	1	2	3	4
21.	I am good at seeing the connections between something new I learn or hear and other things I already knew.	1	2	3	4
22.	I can compare and contrast new situations with old ones for decision-making.	1	2	3	4

	<b>In the past 6 months, how often you have had the following behavior?</b>	<b>Never</b>	<b>Sometimes</b>	<b>Frequently</b>	<b>Always</b>
23.	I consider the pros and cons of each alternative to select the best way to solve the problem.	1	2	3	4
24.	I am able to mentally sort or re-order items by size without needing to see them again or write anything down.	1	2	3	4
25.	I am able to memorize the route/directions after the first trip.	1	2	3	4
26.	I can mentally calculate the distance to know which route is longer or shorter.	1	2	3	4
27.	If I need to do several errands, I can mentally calculate the most efficient route.	1	2	3	4
28.	Even if two shapes are quite close in size, I can tell which is larger without having to physically put them next to one another.	1	2	3	4
29.	If I follow someone along a route to get somewhere I haven't been before, I can find my way back without difficulty.	1	2	3	4
30.	When working on a jigsaw puzzle, I can tell whether a piece will fit in a certain place or not before actually placing it there.	1	2	3	4
31.	I am able to switch from seeing something as an unwelcome problem to seeing it as a welcome challenge.	1	2	3	4
32.	Amidst the bad, I can still see the good things that are hidden.	1	2	3	4
33.	I always find a way to succeed despite obstacles.	1	2	3	4
34.	I am able to change my mindset to focus on the present and to enjoy every problem I face.	1	2	3	4
35.	I am able to see opportunities hidden in life's crises.	1	2	3	4
36.	I can turn obstacles into opportunities for self-improvement.	1	2	3	4
37.	I am able to switch my focus among having a conversation with my friends, summarizing report contents, and arranging figures for presentation.	1	2	3	4
38.	I am able to switch my thoughts between focusing on color to focusing on shapes or numbers.	1	2	3	4
39.	I am able to talk on the phone while doing other activities.	1	2	3	4
40.	I can read books and watch TV at the same time.	1	2	3	4
41.	I can have a conversation with different people on a variety of topics at the same time.	1	2	3	4
42.	I can mentally calculate while holding a conversation with friends.	1	2	3	4

**Details:** The BIMEFs consists of 42 items that assess inhibitory control (IC), working memory (WM), and cognitive flexibility (CF), including eight subcomponents for adolescents aged 12-18 years.

	Subcomponents	Number of items	Item number
Inhibitory Control	Cognitive inhibition	3	1-3
	Selective attention	5	4-8
	Self-control	5	9-13
	Discipline	3	14-16
Working Memory	Verbal working memory	7	17-23
	Visual-spatial working memory	7	24-30
Cognitive Flexibility	Being able to change perspectives	6	31-36
	Switching between different mindsets or tasks	6	37-42
<b>Executive Functions</b>		<b>42 items</b>	<b>1-42</b>

**Scoring:** Give “Never” 1 point, “Sometimes” 2 points, “Frequently” 3 points, and “Always” 4 points. Sum scores for all 42 items. Scores ranging from 42 to 168. Higher scores indicate better executive functions.

**Interpretation:** The raw scores were transformed into T-scores and subsequently compared with established norms. The interpretation of norm-referenced scores was based on normalized T-scores. T-scores are z scores times 10 with 50 added to the product, thus ensuring no score is negative. For each EF subcomponent, the total score for that subcomponent was divided by the number of items, then normalized T-scores calculated. For each EF component (IC, WM, and CF), the T-scores for each of its subcomponents was summed and then divided by the number of subcomponents. For EFs overall, the T-scores for IC, WM, and CF were summed. (Since the number of items per subcomponent differed in the BIMEFs, summing across all individual items would have given disproportionate weight to subcomponents with more BIMEFs items.)

**Norms:** The interpretation criteria of BIMEFs according to the country norm-referenced criteria (Standardized T-scores) for Thai adolescents

Component	# of items	Mean	Quintiles				
			Lowest level	Low level	Moderate level	High level	Highest level
Executive Functions (EFs) overall	42	150	< 132	132 - 145	146 -156	157 - 170	> 170
Inhibitory Control (IC)	16	50	< 44	44 - 48	49 - 52	53 - 57	> 57
Working Memory (WM)	14	50	< 43	43 - 47	48 - 52	53 - 58	> 58
Cognitive Flexibility (CF)	12	50	< 43	43 - 48	49 - 52	52 - 57	> 57

#### Citation

Haenjohn, J., Supwirapakorn, W., Tongkhambanchong, S., Namyen, J., Charoenkittayawut, S., Abbott, D., & Diamond, A. (2025). Executive functions in Thai adolescents: Development of an inventory measure, its factors, and norms. *Journal of the International Neuropsychological Society*, 1–14.  
doi:10.1017/S1355617725101550