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Multi-tasking: A challenge for patients with CFS

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As a researcher and a practicing clinical neuropsychologist my task is to assess cognitive function in CFS patients. Once the test measures given are scored and the results interpreted, I provide feedback about my findings. Very often the findings are consistent with decreased information processing speed and poor working memory while overall intellectual function is usually intact. These results are not uncommon in CFS and are supported by increasing research evidence (1,2). During feedback sessions, I aim to explain the deficits found, but are frequently asked the question: “How do these findings relate to what I am experiencing in my daily life and what, if anything, can I do about it?” I will use this brief essay to begin to address these questions.

Many of the *Bulletin's* readers who are CFS patients may have experienced a version of the following scenario told to me by one of my patients: “Since coming down with CFS, food shopping has become an increasingly difficult task for me. I used to be so organized and enjoyed going shopping once a week for all my family’s needs; it made me feel good. I am not able to do this anymore and now go whenever I feel up to it physically and mentally. I generally make a shopping list and try to at least get some of the crucial items, because I never know how long I am able to stay in the store, sometimes I don’t even make it there. I get so confused and exhausted if there is a lot of traffic, I have to stop and then turn around. Once I could not remember where I had to turn and even got briefly lost. I just sat in my car and cried.

When I actually get to the supermarket, parking is very difficult for me due to cars and pedestrians crossing my path, I get confused. I try to park next to a shopping cart carrel, so I can grab a cart to help me walk to the store. Once in the store, the sights, sounds, and smells common to supermarkets, bother me. I try to focus on

shopping list, but although I try hard, I cannot concentrate on figuring out what I need most. I become anxious, upset, and frustrated and start pushing through one aisle after another, hoping the sight of a product may jostle my memory. But now everything feels like it is washing right over me and nothing sinks in. Not even half way through the store, with only a few items in my cart I think I needed, exhaustion overwhelms me forcing me to cut shopping short. I exit the store relieved to escape the noise and the people, but – where did I park?”

This CFS patient describes an event that most people, healthy or sick, consider an everyday, commonplace activity. We do not generally think of all the separate steps or sub-goals involved to accomplish the overarching goal which is to “go food shopping”. Most of us, if healthy, achieve the goals of the sub-tasks involved successfully, because task execution is performed almost automatically. For instance, most individuals do not tend to spend much focused attention on the mechanics of driving a car while monitoring traffic and thinking ahead to the next goal, which they fully expect to achieve once initiated after they navigated the well-learned road to the store and parking the car. Many individuals even manage to simultaneously rehearse their shopping list while driving, listen to the radio, and answer their phone plugged into their ears.

In terms of cognitive science, the ‘everyday’ food shopping event described above is anything but simple. For successful completion, it requires an individual to ‘multi-task’, a term nowadays familiar to almost any adult and an activity coveted as necessary to perform successfully in today’s society. Multi-tasking requires top down control by what some cognitive scientists theoretically call the supervisory attentional system (SAS)(3) or the central executive (4). These executive control systems are thought to provide assistance in doing multiple tasks simultaneously, promoting one, while inhibiting action on another, screening out irrelevant distractions, all the while integrating streams of new information and updating online an individual’s ‘mental computer’. Doing this assures successful completion of subgoals, while delaying the initiation, execution, and completion of future goals ultimately contributing to a successful completion of a larger event, such as food shopping. A smooth functioning executive control system results in an individual’s perception of being able to perform the “food shopping” event effortlessly and almost automatically. Importantly however, for this to occur, information processing speed and working memory have to be intact. This is not the case for many CFS patients. If the ‘executive system’ is not effectively supported by these essential cognitive components, it will not be able to do its job. Effortless tasks become effortful, interfering events and stimuli are not screened out successfully, setting priorities appropriately becomes difficult, overall task execution and completion is jeopardized. Less effortful top down processing turns into more effortful bottom up processing.

While many papers have been published about cognitive dysfunction in CFS, the issue of difficulties with multi-tasking has not been taken explicitly under consideration in CFS yet and is an area for future research consideration. While many cognitive studies have developed paradigms to address task switching and performing dual task, a laboratory paradigm based on the real life perception of patients that they “have lost their edge” or “cannot do even routine tasks at the same time” has been difficult to translate into a quantifiable paradigm. Based on the framework proposed by Norman and Shallice (3), key components for successful multi-tasking are the ability to prioritize, organize, and execute “a number of different tasks within a given period”(5). In 1991, Shallice and Burgess (6) operationalized this concept and developed the “Multiple Errands Test” (MET) and the “Six Element Test” (SET). The MET is a real life task where participants are given some money and a sheet with instructions and are told to buy a set of specific items operating under specific rules told to them (i.e., you must buy tomatoes before you buy potatoes, but you cannot go through the same aisle to get either of the items). The SET is a laboratory task addressing the same concept under more quantifiable circumstances. Patients with neurological disorders affecting frontal lobe function performed these tasks and showed a variety of similar errors including difficulties with sequencing of events according to the rules, being susceptible to internal and external stimuli interfering with task execution, leaving tasks unfinished, forgetting to carry out tasks they wanted to carry out at some future point. Shallice and Burgess considered patients with these everyday life problems “poor multi-taskers”. Since then either the MET or the SET have been used in a variety of patient populations. Based on these tests, Burgess and co-workers also developed the standardized Behavioral Assessment of Dysexecutive Function Battery (BADs) (7). It is a lengthy neuropsychological assessment tool that includes the “Modified 6 Elements Test” a version of the original SET that is rarely used in clinical practice.

I hope I have addressed how poor processing speed and working memory can manifest in daily life and what the hypothetical reason is for this to happen. But the question that remains to be answered is possibly the more important one for CFS patients who have to deal with these problems: “What can I do about it?” Following are some tips I usually advise my patients to consider:

1. Do not continue to try and complete ‘everyday’ tasks, such as food shopping, the same way you did before you became ill. A paradigm shift is in order.
2. Unlike the perpetuated myth that multi-tasking saves time, it does not for patients with CFS; instead unsuccessful multi-tasking takes more time, adds anxiety and frustration, thus compounding the problem. Many CFS patients encounter difficulties multi-tasking. Instead of continuing to try and do multiple things at the

same time, do them serially. It will enhance the number of reasonable goals you can achieve successfully.

3. Instead of developing a shopping list in one sitting trying to remember all the things you thought you or your family members needed, write them down in a dedicated notebook that sits on a dedicated spot on a shelf or counter, as you think of them. Your notepad should have 3 categories to help you prioritize your list to facilitate shopping when you get to the store, taking into account that you may just feel up to getting the most urgently needed items. These categories are: RED (urgent need), YELLOW (needed in near future), GREEN (stock item, long-term need).

4. Depending on how you feel once you get to the supermarket, prepare yourself mentally that you might only get the items in one category. This counts as a successful trip to the store.

5. Do not push the cart through every aisle, it will interfere with your goal oriented approach and tire you out unnecessarily; shop selectively for the items you need. If you are not familiar with the store, try and figure out a select way of shopping by studying the aisle designations. If all else fails, sit down and ask a store attendant to get you the items in a select category that is written in your notebook.

6. Do not drive to the store during rush hour; avoid any additional distractions while driving. The action of driving and monitoring traffic is not as automatic as it used to be and thus requires more attention and more effort. Do not hesitate to ask someone to drive you to the store.

7. Remembering where the car is parked on a big parking lot is a concern that comes up frequently. Try and park your car in the same parking lot area every time you go optimally next to an easily recognizable landmark on the lot. This will reduce the need to rehearse the location while shopping and further enhance a successful shopping experience.

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