Self-Generated Strategic Behavior in an Ecological Shopping Task

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OBJECTIVES. The use of cognitive strategies optimizes performance in complex everyday tasks such as shopping. This exploratory study examined the cognitive strategies people with traumatic brain injury (TBI) effectively use in an unstructured, real-world situation.

METHOD. A behavioral analysis of the self-generated strategic behaviors of 5 people with severe TBI using videotaped sessions of an ecological shopping task (Instrumental Activities of Daily Living Profile) was performed.

RESULTS. All participants used some form of cognitive strategy in an unstructured real-world shopping task, although the number, type, and degree of effectiveness of the strategies in leading to goal attainment varied. The most independent person used the largest number and a broader repertoire of self-generated strategies.

CONCLUSION. These results provide initial evidence that occupational therapists should examine the use of self-generated cognitive strategies in real-world contexts as a potential means of guiding therapy aimed at improving independence in everyday activities for people with TBI.


Maneuvering through the complexities of everyday life situations requires the use of strategic behaviors. Such behaviors facilitate goal attainment in a wide range of tasks and environments as people identify alternative means of completing novel and complex tasks. However, the ability to select and effectively apply cognitive strategies in the changing circumstances of everyday functioning is frequently impaired in the presence of executive function deficits (Cicerone, 2005) known to be highly prevalent secondary to severe traumatic brain injury (TBI; Godefroy et al., 2010). Metacognitive strategy training has been identified as a practice standard for interventions targeting executive function deficits (Haskins, Cicerone, Dams-O’Connor, Eberle, & Shapiro-Rosenbaum, 2012). Increased knowledge of unprompted strategy use by people with severe TBI may also provide critical information for the training of these deficits, although such training remains a relatively unexplored avenue for intervention. Increasing our understanding of the nature and effectiveness of unprompted strategy use by people after TBI in unstructured everyday situations in interaction with complex environments would appear valuable to better inform occupational therapists of potentially useful cognitive strategies that can be taught within cognitive rehabilitation.

Our aim in this exploratory study was to analyze the self-generated strategic behavior of a selective sample of community-dwelling adults with severe TBI during the performance of an ecological shopping task carried out in their home and community grocery store. The specific objectives were to
1. Identify self-generated strategic behaviors used during a real-world shopping task and
2. Examine the effectiveness of the strategies used, that is, whether the strategies selected assisted the person in moving toward his or her intended goal.

Method

Study Design

This study was a descriptive and exploratory observational study using a retrospective case series design. All participants provided written, informed consent. The ethical review board of the Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal approved the study.

Participants

We used selective sampling to identify 5 community-dwelling adults with severe TBI among participants in an earlier study (Bottari, Dassa, Rainville, & Dutil, 2009b). Selection was made to ensure information-rich cases (Patton, 1990), that is, participants who among them demonstrated maximum variation (Draucker, Martsolf, Ross, & Rusk, 2007; Patton, 1990) in performance on a shopping task, the focus of this study, and the least variation on concomitant variables such as age, gender, TBI severity, level of education, and task familiarity.

Instrumental Activities of Daily Living Profile Shopping-for-Groceries Task

The Instrumental Activities of Daily Living Profile (IADL Profile; Bottari et al., 2009b) is an analytical performance-based measure of independence in everyday activities that considers the repercussions of executive function deficits. The test consists of eight everyday tasks carried out in the person’s home and community environment. When scoring performance, a qualitative analysis of behavioral observations and participants’ verbalizations is completed to document ability pertaining to the four task-related operations of formulating goals, planning, carrying out the tasks, and verifying that intended goals are attained, all important components of executive functions.

Participant performance on each task-related operation is then scored using a 5-level ordinal scale of independence (independence, independence with difficulty, verbal or physical assistance required, verbal and physical assistance required, and dependence). Although the complete test was administered to participants, in this study we analyzed only the shopping-for-groceries task. To document all four task-related operations related to this task, participants are simply told that they have $20 to cover any incurred expenses related to having the examiner and an assistant for lunch. A number of validation and reliability studies have been completed on the tool (Bottari, Dassa, Rainville, & Dutil, 2009a; Bottari et al., 2009b; Bottari, Dassa, Rainville, & Dutil, 2010a, 2010b; Bottari, Gosselin, Guillemette, Lamoureux, & Ptito, 2011). Briefly, exploratory and confirmatory factor analysis of data obtained on 100 participants with moderate or severe TBI provided support for six correlated factors explaining 73.6% of the variance observed when scoring performance on the IADL Profile (Bottari et al., 2009b). A generalizability study on factor and total scores showed that 100% of generalizability coefficients indicated acceptable to excellent reliability, with most (75%) coefficient values being larger than .90 (Bottari et al., 2010a). Internal consistency was shown to be high to very high, with Cronbach’s alpha ranging from .81 to .98 and consistency of the total scale being .95 (Bottari et al., 2009b).

Identification of Criteria for Strategic Behavior Analysis

Current models of the executive control system (Norman & Shallice, 2000; Stuss, 1991) postulate that strategy generation occurs when a person is faced with a complex or novel situation and that such strategic behavior is reflective of intact executive function. A task is considered complex if it takes place over long periods of time, requires the choice of a solution from among many possibilities, or occurs in a dynamic real-world environment in which numerous environmental variables are not controlled by the examiner (Bottari et al., 2009b). Meeting the novelty criterion implies that the person is faced with a situation for the first time.

Alexander, Graham, and Harris (1998) postulated that strategic behaviors are purposeful, willful, effortful, and facilitative. Strategies are purposeful because they involve consciously deciding on some intentional course of action to satisfy a need or attain a goal and are willful because the person commits and embarks on a deliberate and conscious course of action. Strategies require an added commitment of time and consume mental resources, which renders them effortful. Strategies are also used to enhance performance, thus being facilitative in nature (Alexander et al., 1998). Finally, strategic behaviors can be classified as being either a self-generated internal strategy (SGIS), that is, a strategy that relies on conscious mental manipulations by the user, or a self-generated external strategy (SGES), that is, a strategy that relies on external cues from the environment to enable task accomplishment (Toglia, 2005).

In this study, the context of the IADL Profile evaluation was implicitly considered to meet the complexity...
criterion because the test was specifically developed to meet it (Bottari et al., 2010b). The evaluation context was also implicitly considered to meet the novelty criterion because, although situations meeting this criterion may vary for each person tested with the IADL Profile, being unexpectedly confronted with the need to prepare lunch for unexpected guests is a novel element for many participants with TBI. To identify behaviors and verbalizations reflective of cognitive strategy use, we examined all overt behaviors and verbalizations occurring within the context of the IADL Profile evaluation to determine whether they were purposeful and willful. Although we previously stated that cognitive strategies are also implicitly effortful and facilitative, within the context of this study we chose to include in our analysis behaviors and verbalizations that may or may not have met these two criteria as a result of both the difficulty in determining to what extent a behavior was effortful and the need to document all potential behaviors of interest (facilitative and nonfacilitative). Finally, we categorized strategic behaviors as either SGIS or SGES.

Procedures and Data Collection

The data source for this study included 134 min of videotapes of participants with TBI completing the shopping-for-groceries task of the IADL Profile (Bottari et al., 2009b). We analyzed overt behaviors and verbalizations according to IADL Profile guidelines (Bottari et al., 2009b). Mainly overt cognitive strategies (i.e., strategies that are easily visible and observable by others; Toglia, Rodger, & Polatajko, 2012) were coded because participants were observed while completing the task of shopping for groceries. They were, however, asked to verbalize their thoughts when formulating the goal and planning the task, which allowed us to also identify some covert strategies, that is, strategies that are usually internalized and hidden.

Data Analysis

The second author (Shun), an occupational therapist with clinical experience and a doctoral student, undertook the preliminary analysis of all videos on the basis of the theoretical and conceptual criteria described previously. Given the exploratory nature of this study, this first round of coding led to a refinement of codes associated with different types of observed strategic behaviors. A coding guideline was then developed that took into account the theoretical and conceptual criteria but also expanded the description of strategic behaviors by proposing a definition for each different type of observed strategic behavior and providing behavioral examples taken directly from the participants’ videos. Using this coding guideline, all videos were analyzed a second time by two independent observers, a student at the professional master’s level in occupational therapy and a research assistant also working as a clinical occupational therapist. Each independent observer met with the first and second authors (Bottari and Shun) to discuss the results of the coding process, and consensus was achieved in instances in which discrepancies were observed. Qualitative video analyses were completed using NVIVO (QSR International, 2012) and Transana (Woods & Fassnacht, 2008).

Results

The participants were 4 men and 1 woman whose ages varied between 38 and 46 yr. All had sustained a severe TBI on the basis of Glasgow Coma Scale (Teasdale & Jennett, 1974) scores and duration of posttraumatic amnesia. Of the 5 participants, 4 had evidence of frontal lobe injury on computerized tomography scan, 3 unilaterally and 1 bilaterally. To ensure maximum variation in our small sample, we deliberately chose the 5 participants to represent each level of independence (independent, independent with difficulty, verbal assistance required, verbal and physical assistance required, dependent) when accomplishing the IADL Profile shopping task. Time taken by participants on this task ranged from 6 to 50 min with an average time per participant of 27 min (see Figure 1). Brief neuropsychological testing indicated that all but 1 participant (C.D.) performed within normal limits on standard neuropsychological measures of executive function (working memory, inhibition, and planning). C.D. had severely impaired planning and working memory. Details of the participants are presented in Table 1.

Identifying Which Behaviors Are Strategic and Which Ones Are Not

In this exploratory study, we used a novel methodology to identify and analyze strategic behaviors. When coding the performance of the participants accomplishing a real-world shopping task, the three observers recorded a behavior as being strategic if the behavior appeared to be purposeful (i.e., goal oriented) and willful (i.e., deliberate and conscious). Coding the overt behaviors of the most independent participants, G.O. and B.Y., using these criteria was relatively simple because their behaviors were inferred to be intentional and oriented toward achieving the goal of shopping for missing ingredients to prepare a meal for unexpected guests. For example, the most independent participant (G.O.) formulated the goal to shop for missing ingredients for her meal, and her behaviors throughout the
task were directed at achieving this goal. She generated and used several strategies that allowed her to efficiently attain her goal (see Figure 1 and Table 2).

However, in other instances, determining whether a behavior was strategic or not proved to be challenging, and discussion among the observers was required to achieve consensus. For example, M.T. had difficulty formulating the goal of shopping for groceries and was unable to spontaneously generate strategies that would enable him to pursue the task. Confronted with an evaluation context (buying groceries and preparing lunch for unexpected guests) that was outside his normal routine, M.T. was unable to spontaneously adapt. He was insistent that he only visited the grocery store on a weekly basis and was only able to formulate the task goal when provided with specific cueing from the examiner. M.T. then suggested a simple plan involving the purchase of a single item at a store with very limited choices (corner store), akin to a task simplification strategy. Use of this manner of attaining his goal could approximate a SGIS because it facilitated goal attainment by decreasing the likelihood of encountering new problematic situations and provided a situation with reduced task complexity. However, given the amount of cueing provided by the examiner, the extent to which this participant’s behavior was willful (and thus explicitly strategic) was unclear, leading the three observers to arrive at the consensus that this behavior could not be considered strategic.

Other behaviors clearly did not meet the criteria and were not recorded because they were not strategic in nature. For example, the dependent participant (C.D.) showed a complete lack of self-generated strategic behaviors. He presented with extensive difficulties in all task-related operations (formulating the goal, planning, carrying out the task, and verifying attainment of the initial goal) and only managed to formulate the goal and plan the task with continuous and explicit cueing provided by the examiner. He walked randomly around the store without reading the signage and scanned the store and shelves in an aimless fashion. When in front of the display of spaghetti sauces, C.D. did not attempt to read labels or seek assistance to decide which one to purchase; he seemed to be staring blankly at the display.

Use of Internal and External Strategies

Further analysis of self-generated strategies used by the participants was performed, and each strategy was categorized as being either internal or external. We use the case of participant G.O. to demonstrate how each strategic behavior displayed in the shopping task was categorized as either an SGIS or an SGES.

Case Example: Participant G.O. G.O. independently formulated the goal to shop for missing ingredients for her meal, and throughout the task she generated and used a combination of internal and external strategies that would enable her to pursue the task. Confronted with an evaluation context (buying groceries and preparing lunch for unexpected guests) that was outside his normal routine, M.T. was unable to spontaneously adapt. He was insistent that he only visited the grocery store on a weekly basis and was only able to formulate the task goal when provided with specific cueing from the examiner. M.T. then suggested a simple plan involving the purchase of a single item at a store with very limited choices (corner store), akin to a task simplification strategy. Use of this manner of attaining his goal could approximate a SGIS because it facilitated goal attainment by decreasing the likelihood of encountering new problematic situations and provided a situation with reduced task complexity. However, given the amount of cueing provided by the examiner, the extent to which this participant’s behavior was willful (and thus explicitly strategic) was unclear, leading the three observers to arrive at the consensus that this behavior could not be considered strategic.

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and compared the list of required items with those actually available in her pantry (SGES). She talked aloud (SGIS) while deciding which items were required and which grocery store she would choose to go to considering that she had not resumed driving since her accident (SGIS). She also wrote a list of missing ingredients that she needed to purchase (SGES).

When carrying out the task at the grocery store, she purposefully searched for cues in her physical and social environments. She systematically read cues available on signage in the store (SGES), visually scanned aisles and shelves (SGES), regularly consulted her list (SGES), checked off items when she found them (SGES), and read labels and compared items (SGES). When unable to find an item, she asked a clerk for assistance (SGES). Finally, she checked that she had all of the necessary ingredients for her meal in her shopping cart (SGES). She bought a total of nine items and spent $16. It took her 23 min to accomplish the entire shopping task.

Case Examples: Other Participants. Performance of the other 4 participants were analyzed in a similar manner, and Figure 1 provides a summary of findings for each participant. The 2 participants (G.O. and B.Y.) considered independent used many internal and external strategies. Of the 3 participants who either required assistance to shop or were dependent in shopping for groceries, 2 participants (M.T. and C.D.) self-generated only one strategy. They also had poorer task outcomes because both bought only a single item at the store, and C.D. took an excessively long period of time to accomplish the shopping task overall (50 min).

The 5th participant (T.B.) generated a number of internal and external strategies to address the series of complex and novel situations with which he was confronted when carrying out the task (limited familiarity with receiving guests for a meal, going grocery shopping, entering a turnstile using a walker, pushing a shopping cart while using a walker, buying less familiar but healthier ingredients for the occasion). In terms of SGIS, T.B. used strategies such as self-talk, in which he asked himself where he could find bread and verbalized trying to visualize the guests having lunch with him and the food consumed at each stage of the meal. In terms of SGES, T.B. used strategies such as reading signage in the aisles and asking a clerk to help locate the items he sought to purchase. Despite the broad use of strategies to accomplish the task, T.B. still required verbal and physical assistance from the examiner to attain the task goal.

Further Categorization of Strategic Behavior and Frequency of Use

The methodology used in this exploratory study allowed for further categorization of observed strategic behaviors. Table 2 presents the different types of self-generated strategies observed, suggested operational definitions, and their frequency of use by each participant.

The participants most frequently generated external strategies. Of the 5 participants, 4 sought cues from the social environment to pursue the task (SGES). This strategy was the only one that the dependent participant (C.D.) was able to self-generate and consisted of his asking the examiner where he could pay for the sauce he wanted.
Participant T.B.’s behavior also illustrated how using cues from the social environment can be strategic: He sought out the examiner’s preferences to decide on which items to purchase and asked both his mother (coincidentally at the grocery store) and a clerk to help locate and identify items. Four of 5 participants visually scanned the environment, and 3 used cues in the physical environment while accomplishing the shopping task (both SGES), such as systematically reading cues available on signage in the store or reading labels. The environment played a particularly crucial role in T.B.’s ability to accomplish the shopping task. Before going to the grocery store, T.B. developed a simple plan involving the purchase of a single item, a ready-made pasta meal. However, drawn by the physical and social environments of the grocery store, he developed a more complex menu involving the purchase of a number of items to prepare a much more complete meal, which exemplifies how using environmental cues can enhance performance.

The most frequently used internal strategy (by 3 of 5 participants) observed was participants referring to their personal preferences while making a decision when many options were available. For example, when T.B. was choosing something to drink from among all the possibilities displayed in the refrigerator, he referred to his own personal preference for apple juice. Self-talk, another SGIS, was used by 2 participants, whereas all other internal strategies were used by only 1 participant.

### Strategy Effectiveness

The majority of self-generated strategies observed were facilitative (see Table 2), that is, they helped the participants successfully perform different steps of the task or attain the goal of shopping for groceries. All internal strategies identified were facilitative, although three instances occurred in which an external strategy did not move a participant toward his or her goal. In these instances, the participants had sought information from

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**Table 2. Identification of Type of Self-Generated Strategies Present in the Evaluation Segment, Frequency of Use, and Degree of Facilitation for Each Participant**

<table>
<thead>
<tr>
<th>Self-Generated External Strategies</th>
<th>Participants and Level of Independence</th>
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| Seeking cues from the social environment | G.O., Independent  
B.Y., Independent  
M.T., Verbal Assistance  
T.B., Verbal and Physical Assistance  
C.D., Dependent |
| Visually scanning the environment | X  
X  
✓  
✓  
✓ |
| Using cues in the physical environment | ✓  
✓  
✓  
✓  
✓ |
| Creating a written checklist | ✓  
✓  
✓  
✓  
✓ |
| Using a written checklist | ✓  
✓  
✓  
✓  
✓ |
| Verifying a written checklist | ✓  
✓  
✓  
✓  
✓ |

<table>
<thead>
<tr>
<th>Self-Generated Internal Strategies</th>
<th>Participants and Level of Independence</th>
</tr>
</thead>
</table>
| Referring to one’s own preferences | ✓  
✓  
✓  
✓  
✓ |
| Using self-talk | ✓  
✓  
✓  
✓  
✓ |
| Generating a mental image | ✓  
✓  
✓  
✓  
✓ |
| Comparing alternatives | ✓  
✓  
✓  
✓  
✓ |
| Creating a mental checklist | ✓  
✓  
✓  
✓  
✓ |
| Using mental rehearsal (I) | ✓  
✓  
✓  
✓  
✓ |

Note. ✓ = facilitative strategy; X = nonfacilitative strategy.
a person in the store (e.g., asking a clerk where the pasta was located), but the person did not provide useful information (e.g., mentioned the wrong aisle). Although the participants attempted to use a strategy that had the potential to be effective, the outcome was not facilitative, highlighting how some external strategies are dependent on the environment, over which one has no control.

Discussion

In this exploratory study, we used a novel methodology to identify strategic behaviors generated by 5 participants with severe TBI when performing a real-world shopping task. These participants were comparable in age, level of education, and familiarity with shopping, yet all differed greatly in their level of independence when tested with the IADL Profile. In-depth analysis of video footage of participants by three independent observers suggests that the element that distinguished the highest functioning participant from the others was her effective use of multiple, self-generated internal and external strategies.

Selecting Strategic Behaviors to Accomplish a Real-World Shopping Task

Although some have suggested that only internal strategies are effortful, requiring the activation of executive functions (Bouazzaoui et al., 2010), in this exploratory study we found that even external strategies may require effort for some more dependent people with severe TBI. For example, the strategic use of visual cues present in the environment of the grocery store requires participants to actively (i.e., consciously and purposefully) search for these environmental cues and then use them to facilitate goal attainment, something our most dependent participant was unable to do. Hence, the strategic use of available cues in the physical and social environments is likely linked to an internally goal-driven decision to use the cue.

For example, while searching for pasta, T.B. self-generated the strategy of using environmental cues by visually scanning the aisles and signage. His search was goal directed, conscious, systematic, and helpful because he found the item he was looking for. T.B.’s strategic behavior contrasts with C.D.’s because C.D. was never observed to actively seek cues from the physical environment, nor did his behavior seem goal oriented. He appeared to randomly walk through the aisles and never requested help from those in his social environment despite being unable to attain his goal. Our interpretation is that, although theories have so far presented internal and external strategies as two distinct categories, a certain overlap may exist because even external strategies have an internal component whereby, when faced with a novel or complex situation, the person must first identify potential external strategies and then select and use the one considered most efficient (Walsh & Anderson, 2009). Clearly, the process of identifying alternatives and selecting the best alternative is an internal one.

In this study, external strategies were the most frequently generated. When comparing the strategies generated by the least independent participant (C.D.) with the ones generated by the most independent participant (G.O.), results suggest that some external strategies were accessible to even the most dependent person (e.g., seeking cues from the social environment), whereas others (e.g., creating and using a checklist) were used only by the most independent person. Thus, in the domain of external strategies, it is possible that a hierarchy of associated cognitive demands exists, ranging from those requiring the greatest cognitive effort in which strategies are elaborated by the person (e.g., checklists) to those requiring the least cognitive effort in which the person seeks cues from the physical (signage) or social (asking for help) environments. Figure 2 schematizes this dynamic process.

The extent to which each strategy is effortful for the person and requires the activation of executive functions likely depends on the person’s cognitive, language, and communication abilities as well as task complexity and environmental complexity. This area is one for future research. Enhanced independence and effective compensatory behaviors are more likely to occur if a match exists between the environmental demands and the person’s ability to recognize the need to generate and use appropriate strategies (Mateer, 1999; Schneider, Hurst, Miller, & Ustün, 2003; Sohlberg, Mateer, & Stuss, 1993; Wilson, 2000), highlighting the important link between self-awareness and executive functions.

Observed Strategic Behaviors and the Link to Strategy Training Interventions

Cognitive strategy training for people with executive dysfunction after a TBI has been shown to be effective in enhancing performance of daily tasks (Cicerone, 2005; Dawson et al., 2009; Levine et al., 2000; Spikman, Boelen, Lamberts, Brouwer, & Fasotti, 2010; Toglia, Johnston, Goverover, & Dain, 2010). Preliminary evidence has shown support for interventions such as self-instructional strategies (Fertherlin et al., 2010), verbal mediation (Burke, Zencius, Wesołowski, & Doubleday, 1991), goal management training (Levine et al., 2000), and problem-solving frameworks (Dawson et al., 2009). However, an individual analysis of self-generated strategy use and the link with where breakdown in goal-directed behavior occurs for
people with TBI may help further individualize these rehabilitation interventions. Although further research is needed to refine and test the methodology used in this study, the findings raise the question as to whether greater success in a strategy training intervention could occur if it targeted the exact stage at which a breakdown in strategic behavior occurs or if training involved reinforcing what the person is already doing well. Moreover, participants with better outcomes used a greater variety of cognitive strategies, suggesting the pertinence of examining multiple strategy training in multiple contexts, the preliminary effectiveness of which was recently shown (Toglia et al., 2010).

Limitations and Future Considerations

We acknowledge that a detailed neuropsychological assessment of the participants would have allowed us to explore some of the potential underlying causes of effective or ineffective self-generated strategy use. However, this first exploratory analysis of overt strategic behavior use in an ecological environment allowed us to explore with a set of theoretically based criteria the variations in strategy use (facilitating or not) by participants with severe TBI and to identify unprompted strategies used by higher functioning participants. The identification of internal strategies was limited to identifying those that participants spontaneously verbalized to the examiner while being videotaped. Given the use of the IADL Profile assessment, the shopping task was unstructured (i.e., with the least interference possible from the examiner), and the examiner did not systematically question the participant regarding inner thoughts occurring while accomplishing different parts of the task. Participants may have been using a greater repertoire of internal strategies, which the observers could not code when viewing the videos. Finally, further studies are required to gain a broader perspective on unprompted strategy use by people with TBI in a range of novel and complex everyday tasks in numerous community environments.

Implications for Occupational Therapy Practice

Occupational therapy practitioners can play an important role in facilitating greater independence in everyday activities of people who have sustained a severe TBI. Results of this exploratory study provide the following indications:

- Occupational therapists can be instrumental in identifying unprompted strategy use in real-world contexts that facilitates goal attainment.
- Occupational therapists can facilitate the identification of environments that are more adapted to the needs of people with cognitive deficits.

Conclusion

Our results suggest that an individualized analysis of unprompted strategy use provides valuable insights into the types of strategies used by people with severe TBI in unstructured real-world environments that facilitate higher functioning. Knowledge of these strategies should help further enhance the approach to cognitive rehabilitation interventions for these people.

Acknowledgments

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References


