Garden Shears or Scissors?
Everyday Action Impairment in Vascular Dementia

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Introduction

Difficulties performing everyday tasks, such as grooming and cooking, are a prominent feature of dementia and occur early in the disease (Giovannetti *et al*., 2002). These difficulties are associated with grave consequences, including caregiver burden, institutionalization, and even death. Nevertheless, the relevance of dementia diagnosis to everyday functioning has been largely unexplored. However, two studies using simple tasks and blunt scoring methods have shown no difference across dementia subgroups (DeBettignes *et al*.,1993; Zimmer *et al*.,1994).

This study explores differences in everyday action between patients with vascular dementia (VaD) *versus* those with Alzheimer's disease (AD). Performance on a range of tasks was closely analyzed to examine whether everyday action impairments could be linked to the specific neurocognitive syndrome associated with dementia diagnosis.

Methods

Participants - 21 VaD and 17 AD outpatients were recruited from a memory assessment program (UMDNJ-SOM). Diagnoses were made according to the NINCDS-ADRDA criteria for probable AD or the California Criteria for probable/ possible ischemic vascular dementia. Table 1 shows the demographic and neuropsychological characteristics of the groups.

Table 1: Demographic and Neuropsychological Data

	AD (n = 17)		VaD (n = 21)		
	M	SD	M	SD	t value
Age	78.4	5.9	78.3	6.7	0.03
Education	12.7	3.5	11.2	2	1.8
MMSE	22.5	3.2	21.9	3.4	0.57
GDS	4	2.9	6.4	4.9	1.7
Executive Functions					
WMS (Boston Version) Mental Control (% correct)	77.8	22.9	56.3	19.2	3.2**
Graphical Sequence Test-Dementia Version (errors)	6.9	5.9	18.8	18.2	2.25*
Language					
Boston Naming Test (total correct)	41	13.7	33	13.2	1.8
Animal Word List Generation (total responses)	10	5	8	4	1.9
Episodic Memory					
PrVLT Delayed Verbal Recognition Discriminability	70.1	8.3	83.4	9.1	4.75**

* p < .05; **p <.01

Procedures - Everyday action was assessed with the **Naturalistic Action Test** (**NAT**; Schwartz, *et al.,* 2003; see Giovannetti *et al*., 2002), a standardized measure that requires participants to perform 3 everyday tasks of increasing complexity:

Item 1 - prepare toast and coffee

Item 2 - wrap a gift while avoiding visually- and semantically-salient distractor objects (garden shears for scissors, stapler for tape, etc.)

Item 3 - pack a lunch box and a school bag while several necessary objects (knife, thermos lids) are stored in a drawer containing additional objects (ice tongs, coupons, etc).

NAT Scoring - The following variables were collected for each item and the Total NAT:

Accomplishment Score - percent of steps accomplished

Error Score - number of key errors made

In addition, the Error and Accomplishment Scores were converted to a **NAT Score**, which reflects the overall level of impairment (range 0 -18). According to older adult norms, a NAT Score below 14 indicates everyday action impairment (Sestito *et al*., 2005).

Results

Fig 1 shows the majority of participants in both groups fell within the impaired range on the **NAT Score;** there was no difference in this proportion across the groups (Fisher's Exact p = .71).

Fig. 1: Proportion of Participants Impaired on the NAT Score.

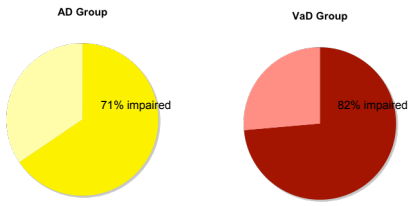


Fig. 2 shows VaD participants obtained significantly lower Accomplishment Scores on Item 2 (gift with distractors; z = 3.3, p = .002). Other comparisons were not significant (z < 0.7; p >.49).

Fig. 2: Accomplishment Score across Groups.

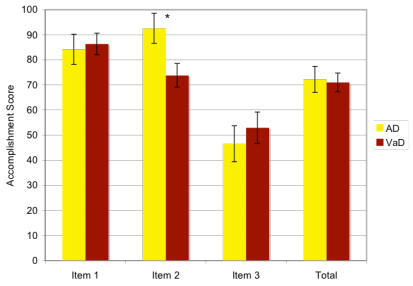
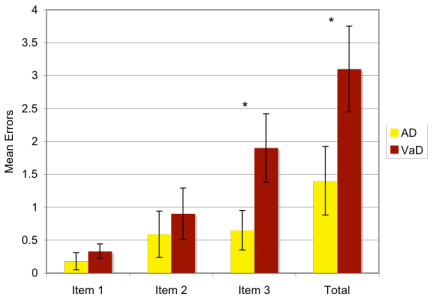


Fig 3. shows Error Scores were consistently higher for the VaD group, but differences on only Item 3 (z = 2.5, p = .018) and Total Errors (z = 2.2, p = .031) were significant. (z < 1.4; p >.30 for all other comparisons).

Fig. 3: Error Score across Groups



Conclusions

The groups did not differ in dementia severity or overall level of everyday action impairment. However, the VaD group accomplished significantly fewer steps in the presence of distractor objects that were semantically and visually similar to target objects (Item 2) and committed more errors on the most complex task (Item 3).

Dementia diagnosis has relevance to everyday function. The executive control deficits associated with VaD may contribute to specific action difficulties, such as distractor interference and inefficiency in complex contexts. AD participants accomplished few steps and committed few errors; thus, in this group everyday action may be negatively influenced by episodic memory failures for multiple goals or lengthy task instructions.

Dementia subgroups may benefit from behavioral strategies/treatments for everyday action difficulties that are targeted to their specific everyday action impairments.

Future studies of everyday action across dementia subgroups must use complex tasks that yield detailed performance variables.

References

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