

Background

Motor speech disorders in individuals with diseases of the basal ganglia (BG) are well documented [1]. Recent studies of diseases of the BG suggest that the BG also play a critical role in expressive language performance [2]. The BG are connected to the cerebral cortex via a family of cortical-BG-thalamic-cortical circuits that are distinguished by their unique function [3]. Extensive connections exist between most areas of the cerebral cortex particularly the frontal lobes, that are critical to expressive language production [4]. The BG and these same connections are susceptible to disease that negatively influences their role in successful performance for both expressive language and motor speech.

Successful expressive language production contains the linking of meaning across sentences or cohesion [5]. Cohesion occurs via the use of cohesive markers, which are words that direct the listener to information found outside individual sentences [5]. Disruption of cohesion has been observed in a variety of neurological disorders including: AD [6, 7], TBI [8-10], CVA [7, 11], and in normal young and elderly adults [7, 12]. An examination of the influences of BG disease on the cohesiveness of narrative discourse has not been reported in the current literature.

Purpose: To examine the effects of PD on the use of cohesion during discourse production.

Hypothesis: Individuals with PD will exhibit differences in total number of reference cohesive ties and percent complete reference cohesive ties (cohesive adequacy).

Methods

Participants: 12 subjects with idiopathic PD (Hoehn & Yahr Stage 2-3) and 12 age, education, ethnicity and gender matched neurologically intact controls.

Procedure:

Standardized Assessments: Mini-Mental Status Exam, Boston Naming Test, Wechsler Memory Scale-Logical Memory I.

Narrative Discourse Collection: Each subject was instructed to discuss three topics: a typical day, a memorable vacation, and their family, for a minimum of 3-minutes. Standardized verbal cues were provided to continue narratives when the 3-minute minimum was not achieved. All narratives were audio-taped.

Measures of Referential Cohesion: Total number of reference cohesive ties and percent complete reference cohesive ties (cohesive adequacy) were completed.

Reference cohesive ties were judged as:

Complete - referent could be easily found in the preceding discourse.

Incomplete - referent could not be identified in the discourse or was not evident in the context.

Erroneous - multiple potential referents could be identified in the discourse, making the marker ambiguous.

Statistical Analyses: Non-parametric tests were completed for group comparisons of the (1) cognitive and language measures, (2) the total number of reference cohesive ties, and (3) the percent complete reference cohesive ties.

Results

No significant differences were observed on baseline cognitive and language measures (MMSE, WMS-LMI, BNT) (Table 1). No significant differences observed in the total number of reference cohesive ties produced for the three narratives (typical day, $p=.16$; vacation, $p=.49$; family, $p=.90$) (Figure 1) or percent correct use of complete reference cohesive ties (cohesive adequacy) (typical day, $p=.17$; vacation, $p=.15$; family, $p=.25$) (Figure 2).

Table 1. Demographic, Cognitive, and Language Comparisons for PD and Controls.

Variable	PD subjects		Controls		T	p
	M	SD	M	SD		
Age	71.8	13.2	72.6	13.5	-0.14	>.05
Education	12.0	1.3	12.8	2.8	-0.94	>.05
Parkinson Years	3.6	4.6				
H & Y stage	2.4	.5				
BNT	52.8	6.7	51.8	8.4	.31	>.05
MMSE	28.6	1.4	28.8	1.7	-.26	>.05
WMS-LMI	27.5	11.5	30.6	14.4	-.58	>.05

Figure 1. Total Number of Reference Ties Produced by PD and Control Subjects

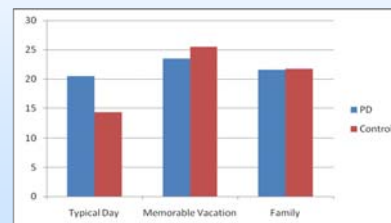
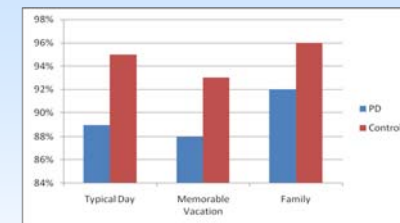


Figure 2. Percent Complete Reference Cohesive Ties Produced by PD and Control Subjects



Conclusions

In this pilot study of individuals in relatively early disease states, we observed no significant differences in the use of reference cohesive ties. Disruption of cohesion is a feature of discourse production that has the potential to be masked in PD by more commonly observed and reported motor speech deficits. Since cohesion is believed to facilitate the continuity of meaning in narrative discourse, future studies are needed to measure cohesion in more advanced disease states. Disruptions in cohesion can indicate a more global disruption of language use that is traditionally believed to be preserved in PD.

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