

# A Group Intervention Model for Speech and Communication Skills in Patients With Parkinson's Disease: *Initial Observations*

**Yael Manor**

*Tel-Aviv Sourasky Medical Center*

**Jennie Posen**

*Tel-Aviv Sourasky Medical Center*

**Ofer Amir**

*Sackler Faculty of Medicine, Tel-Aviv University*

**Nechama Dori**

*Tel-Aviv Sourasky Medical Center*

**Nir Giladi**

*Tel-Aviv Sourasky Medical Center and Sackler Faculty of Medicine,  
Tel-Aviv University*

---

*Various speech and voice disorders affect 70% to 85% of individuals with Parkinson's disease (PD). Speech treatment is generally conducted on an individual basis, with family member involvement. Clinical experience indicates that many patients do not practice treatments at home or apply the learned techniques in everyday situations. An eight-session, task-oriented group intervention with PD patients who also had learned speech techniques individually prior to this program is described. Preliminary observations using subjective and objective measures indicate improvement in voice characteristics, self-perception of speech intelligibility, communication skills, and application of these skills in everyday communication situations.*

---

Speech and voice disorders affect 70% to 85% of individuals with Parkinson's disease (PD; Schulz & Grant, 2000). These disorders are considered to be the result of dysfunction with systems involved in respiration, phonation, articulation, resonance, and prosody (Logemann, Fisher, Boshes, & Blonsky, 1978; Swigert, 1997). Speech disorders associated with PD

are known as Parkinsonian dysarthria or hypokinetic dysarthria (Schulz & Grant, 2000). They include hypophonia, reduced loudness, hoarseness, monotone, and mono-loudness (Aronson, 1990). Additional characteristics of Parkinsonian dysarthria include imprecise articulation, reduced stress, and instability in speech rate (Johnson & Pring, 1990). Moreover, there may be a reduction in the pragmatic communication skills, especially in the areas of conversational appropriateness, turn-taking, prosodics, and proxemics (McNamara & Durso, 2003). Furthermore, people with PD often exhibit reduced motivation for communication and low morale (Giladi et al., 2000).

These aspects of PD directly affect the social skills, lifestyle, and psychological well-being of people with PD (Coates & Bakheit, 1997; Ramig, Countryman, O'Brien, Hoehn, & Thompson, 1996). These patients often report experiencing feelings of embarrassment, isolation in social situations, and reluctance to engage in social interaction (Scott & Caird, 1983).

Speech therapy is considered valuable and effective for people with PD, particularly when treatment is administered

intensively and patients are motivated and actively involved in the therapeutic process (Kerschan, Pankl, & Auff, 1998). Researchers have suggested various therapeutic approaches for patients with PD who exhibit speech disturbances. During the 1980s, speech therapy mainly addressed the prosodic aspects of speech (Le Dorze, Dionne, Ryalls, Julien, & Ouellet, 1992; Robertson & Thomson, 1984; Scott & Caird, 1983; Scott, Caird, & Williams, 1985). Later other facets of speech and communication were added to the evolving therapeutic scheme, including respiration, articulation, pitch variation, vocal loudness, strength and speed of articulators, speaking rate, intonation and stress patterns, and communication intelligibility (Hammen & Yorkston, 1996). These modifications in the treatment program were reported to have a favorable effect on various aspects of speech. Moreover, most patients reported that the improved speech pattern was maintained after the conclusion of the therapy program (Schulz & Grant, 2000).

At present, speech therapy programs for patients with PD who exhibit hypokinetic dysarthria mainly target vocal loudness, following the Lee Silverman Voice Treatment (LSVT) protocol (Ramig, Countryman, Thompson, & Horii, 1995; Ramig, Pawlas, & Countryman, 1995). In essence, the LSVT focuses on increasing respiratory effort and improving vocal fold adduction, thus increasing vocal loudness. The program is administered systematically and intensively, and patients attend four 50–60 min sessions per day throughout four consecutive weeks (Ramig, Countryman et al., 1995; Ramig & Dromey, 1996; Ramig, Pawlas, & Countryman, 1995; Ramig, Sapir, Countryman, & Fox, 2001). The effectiveness of the LSVT program has been demonstrated in comparison with other programs (Ramig, Countryman, et al., 1995) and in a 24-month posttreatment follow-up (Ramig et al., 2001). De Swart, Willemsse, Maassen, and Horstink (2003) suggested an addition to the LSVT program. They recognized the importance of increasing loudness for people with PD but contended that pitch monitoring is also necessary to prevent a strained voice. To that end, they developed a Pitch Limiting Voice Treatment (PLVT) approach, which is based on the LSVT and focuses on increasing loudness while maintaining vocal pitch at an appropriate level.

Speech therapy for people with PD is traditionally conducted individually (Scott & Caird, 1983). Individual therapy enables therapists to maximize the direct practice time in the therapy session and facilitates specific exercises tailored to individual needs. It also enables the patient to receive the therapist's undivided attention. Furthermore, our clinical experience has shown that some patients with PD are more open to discussing personal problems related to communication and swallowing than they would be in a group setting. The possibilities of practicing communicative skills within an individual setting, however, are limited. Such tasks as turn-taking in conversation, engaging in an argument, communicating with more than one person, asking and answering different people's questions, and talking in front of a group of people

can only be practiced in a group setting. Several authors have suggested that individual speech therapy is not always sufficiently productive for patients with PD and that long-term carryover could be limited (Adams, 1997; Yorkston, 1996).

The literature on group speech therapy for patients with PD is scarce. The existing literature, however, does suggest that group settings can have an advantageous effect on patients' communication and verbal skills. Furthermore, a group setting may improve patients' abilities in coping with the psychosocial ramifications of the disease (Posen et al., 2000). Sullivan, Brune, & Beukelman (1996), for example, described an 8-session behavioral intervention group that focused on speech performance for six patients with PD and their spouses. Sullivan et al. reported that the patients' speech performances improved and that improvements were preserved 10 months following the intervention. De Angelis et al. (1997) conducted a 13-session voice rehabilitation group therapy program for patients with PD. This 1-month program primarily targeted increasing laryngeal sphincteric activity. Routine clinical voice therapy measures, such as an increase in maximal phonation times, decrease in the values of the s/z ratio (examining the ratio between the maximum time that a patient can sustain /s/ to the maximum time he can sustain /z/) and air flow, increase in vocal intensity, decrease in the complaints of weak and strained voice, and elimination of complaints of swallowing alterations, revealed improved glottic efficiency and enhanced functionality of oral communication posttreatment.

A group setting enables participants to observe, evaluate, and learn from each other and provides an opportunity to develop and apply coping skills for use in the outside world (Yalom, 1985). Patients with PD who participate in a group can increase their awareness of speech intelligibility through observation of other individuals' speech difficulties. A group also provides opportunities for practicing spontaneous speech and for social interaction in a supportive environment as preparation for daily communication. An additional benefit of group work is that, in an era of managed health care, group work with patients with speech difficulties has been found to be time- and cost-effective (Ramig & Bennet, 1997).

The Movement Disorders Unit at the Tel Aviv Sourasky Medical Center provides therapy for patients with PD who exhibit speech and swallowing disorders. Similar to many other medical institutions, this center has faced growing financial constraints that have led to a reduction in the number of speech–language pathologists (SLPs) and restrictions on insurance coverage for individual intensive speech programs. As a result, speech therapy for people with PD switched from daily sessions to weekly sessions. A preliminary clinical evaluation indicated a pronounced decrease in our patients' motivation to practice therapy techniques at home and to apply the learned techniques in daily situations, as well as a decrease in the clinical effectiveness of the program.

These clinical observations led us to search for an alternative therapy approach that would improve patient motivation and promote generalization. This article provides an initial

description of the treatment program that our team developed and presents preliminary observations regarding the clinical process. We hope that our findings will facilitate further exchanges on clinical and theoretical models among professionals who work with people with PD.

This program is a task-oriented, holistic group treatment for communication difficulties. It was specifically adjusted to the unique needs of patients with PD. It targets the improvement of speech intelligibility and the pragmatic use of language while addressing concerns in communication difficulties experienced by patients with PD. The three major components of the program are (a) voice exercises based primarily on the LSVT program, (b) a supportive group setting to enhance communication skills, and (c) external visual cues to improve speech intelligibility. At present, this group is intended for patients with PD who have already participated in an individual speech therapy program.

## INTERVENTION MODEL

Eight 75-minute consecutive group sessions are conducted weekly. All sessions are led by an SLP and a social worker, both with experience in speech therapy related to PD and group therapy for patients with PD. Each session has four parts: (a) spontaneous interaction, (b) practice, (c) guided discussion, and (d) task assignments. The opening 15 minutes of each session are allocated to encouraging informal communication among the patients. This section encourages social interaction among the group members and increases the naturalness of the communicative situation. The next 20 minutes are devoted to structured group exercises consisting of introducing and practicing new speech exercises as well as reviewing the previous week's assignments. Exercises are based on the LSVT treatment program; thus, exercises focus on increasing loudness and phonatory effort. External visual cues are employed during the speech tasks, based on previous reports of the contribution of these cues to patients with PD in general, (e.g., Georgiou et al., 1993; Rubinstein, Giladi, & Hausdorff, 2002; Ramig, Fox, & Sapir, 2004) and in improving repetitive articulate movements specifically (Ackermann, Koncsak, & Hertrich, 1997). The external cues consist of printed signs on which "wide open mouth," "slow rate," and "loud voice" are written. We noted that these cues assisted the patients in internalizing the instructions during continuous speech and group interaction without interrupting their flow of speech. This improved and shortened the generalization process.

The third part of each session is a 30-minute discussion focused on the difficulties encountered by the patients in specific speech situations. This segment is led by the social worker with the support of the SLP. Coping mechanisms are typically raised by the group leaders, but sometimes by members of the group as well. The topic of discussion can be selected in accordance with the relevant therapeutic goal and the exercises practiced. The external visual cues are also used during this segment. The final 10 minutes of the session are

reserved for assigning homework. The exercises typically target increasing phonatory effort in various speech tasks, and the participants are instructed to practice speech in selected and predetermined communication situations.

Each session is viewed as both a separate entity and a part of a gradual buildup of increasingly complex speech and communication skills. During the course of therapy, the patients are encouraged to participate and initiate communication more extensively. The amount of voice and speech exercises assigned for home practice and in different communication situations is gradually increased as well.

In this therapy framework, three voice exercises adapted from the LSVT program were defined as core exercises. These exercises are practiced in each session and usually are followed by supplementary exercises. Furthermore, participants are instructed to perform these exercises at home for 10 minutes each day throughout the course of the program. The core exercises include the following:

1. Maximum Phonation Time: The patient sustains the vowel /a/ three times for as long as possible;
2. Increased Vocal Loudness: The patient produces the vowel /a/ 10 times for 3 to 4 seconds as loudly as possible; and
3. Maximum Pitch Range: The patient produces the vowel /a/ 10 times in the highest and lowest pitches possible.

Because core exercises are performed simultaneously by all patients during group sessions, measuring voice intensity and pitch range is impractical. Thus, objective measurements of pitch intensity range are performed individually before and after initiating the program. Additional voice exercises included in the program target loudness control in gradually lengthened utterances (i.e., single words, short phrases, sentences, and conversation; see Table 1).

Prior to the program, all group members complete a questionnaire (Johnson, 1975; McGarr & Osberger, 1978; Ramig, Countryman et al., 1995; Ramig, Pawlas, & Countryman, 1995; Schiffman, Reynolds, & Young, 1981) that rates their difficulties in a variety of communication situations, such as communication with a stranger, answering and initiating conversations on the telephone, welcoming guests, and ordering in a restaurant. On the basis of the responses to this questionnaire, group discussions are aimed at targeting specific communication situations that were reported by the participants as most difficult. Guided and open discussions are used to elicit active participation of all patients. Furthermore, role-playing is used as a tool for group practice of specific communicative tasks. Task assignments for home practice are designed to follow the exercises and discussion plan for each session. The assignments include repetitive performance of the core exercises followed by such communicative tasks as conversing with a bank clerk, ordering in a restaurant, and speaking at a family function.

**Table 1.** Activity Plan for Group Therapy

Session	Spontaneous speech	Voice exercises	Topic of group discussion	Task assignment
1	√	• Core exercises	• Meeting new people and introducing myself	• Core exercises, 10 minutes/day
2	√	• Core exercises • Single-word production with increased loudness	• Individual versus group practice • Identifying personal difficulties	• Core exercises, 10 minutes/day • Loud production of common words
3	√	• Core exercises • Phrase production with increased loudness	• Communication with strangers in specific situations (e.g., bank, mall)	• Core exercises 10 minutes/day • Using specific phrases in public settings
4	√	• Core exercises • Sentence production with increased loudness	• Difficulties in social situations • Role-playing practice	• Core exercises 10 minutes/day • Using key sentences in social events
5	√	• Core exercises • Question production, focus on modifying intonation and loudness	• Initiation in telephone conversation • Role-play of telephone conversations	• Core exercises 10 minutes/day • Asking and answering questions on the telephone
6	√	• Core exercises (mutual practice by participants and guests)	• Expectations from and of participants in communication situations	• Core exercises 10 minutes/day (participants and guests) • Engaging in structural conversation between guest and participant
7	√	• Core exercises • Speech initiation, with increased loudness	• Free discussion among the patients	• Core exercises 10 minutes/day • Spontaneous speech in social events
8	√	• Core exercises • Spontaneous speech, focus on loud voice	• Self-evaluation of program and specific techniques	• Maintaining loud voice and "speech rules" in everyday communication

At the end of each session, the participants receive a list of tasks for home practice that gradually becomes longer and more complex. The participants complete a homework time table, which is presented to the SLP at the next session. Any difficulties in carrying out task assignments are discussed in the group. In the group setting, participants can relate their difficulties in performing such tasks as the core exercises or spontaneous speech tasks. Some participants may decide to meet outside of group sessions to reinforce one another's practice sessions. Within the group, participants may share practical tips on ways to overcome embarrassment. This method encourages individual commitment, which is reinforced by the supportive group setting and is an integral part of the program.

Most sessions follow a similar format; the sixth session, however, is conducted differently. Each participant is accompanied by a family member of his or her choice and the guests are required to participate actively in the voice exercises. The

discussion focuses on the role and expectations of the family and patients in communication situations. Patients are instructed to perform the home assignments with the active participation of the accompanying guest, following the guidelines described and discussed during the session. The inclusion of family members in the therapy program serves as an additional bridge to the outside world by exposing group participants to active communication with people other than the group members. It also increases family involvement in the treatment process and the ability of family members to take an active role in practicing.

Because patients with PD exhibit decreased speech intelligibility and reduced speech initiation, the first five sessions of the program focus on strengthening patients' speech and initiation abilities before introducing them to the extended group with family members. A detailed description of the segments of each of the eight sessions is presented in Table 1.

## METHOD

On the basis of the above model, we conducted group therapy for eight patients with PD, following the model of intervention. To assess the therapeutic effect, we assessed voice and communication skills before and after the intervention.

### Participants

Seven men and one woman with PD without dementia, ranging in age from 55 years to 84 years ( $M = 70$  years), participated in the intervention group. All the participants had been treated previously by the SLP who led the group intervention. The SLP had special experience with people with PD. The previous therapy had been conducted individually. These participants exhibited speech disturbances that included hypophonic voice, hoarseness, monotonous pitch, slurred speech, increased speech rate, and dysfluency. We obtained clinical information from the participants' medical chart. The mean disease duration for the group was 14.3 years (range = 6–26). The mean Hoehn and Yahr (1967) score was 2.6 ( $SD = 0.33$ ).

### Measures and Instruments

Measurements were taken at the beginning of the first (T1) and the eighth (T2) sessions. These measures included (a) the *Visual Analogue Perceptual Rating Scale* (VAPRS; Schiffman et al., 1981), (b) the *Speech Assessment Scale* (SAS; Johnson, 1975; McGarr & Osberger, 1978; Ramig, Countryman et al., 1995; Ramig, Pawlas, & Countryman, 1995), (c) a speech-act count using the *Pragmatic Protocol* (Prutting & Kirchner, 1987), and (d) computerized acoustic analyses of recorded speech samples.

The VAPRS is a self-rating questionnaire for the evaluation of voice loudness, speech intelligibility, and speech initiative. It includes nine items for evaluating speech and communication abilities. Responses are converted to a rating scale of 1 to 14, in which 1 = *poorest* and 14 = *best*. The total score for each respondent was the sum of all responses (Schiffman et al., 1981).

The SAS is a rating instrument designed to measure a participant's self-perception of speech clarity. The respondents select the one of six statements closest to their perception of the clarity of their speech, with Sentence 1 = *completely unintelligible speech* and Sentence 6 = *completely intelligible speech* (Johnson, 1975).

The *Pragmatic Protocol* is designed to identify specific speech acts (Prutting & Kirchner, 1987). In the present study, two types of speech acts were examined: initiation and turn-taking. Initiation of speech is defined as initiating speech without being asked to do so. Turn-taking is defined as interacting appropriately with other participants as speaker and listener. These speech acts were counted for each participant during 10 minutes of recorded group conversation at T1 and T2.

All participants were audio recorded at T1 and T2 for acoustic analysis. Each subject was fitted with a directional (cardioid) mini-microphone (Sennheiser, KA100p or ME104). Signals from all the microphones were directed to a digital recording mixer (Studer, 928) and stored on a digital data cartridge. All the recordings were independently transcribed by two experienced SLPs, and only sentences that were transcribed identically by both SLPs were included in the analyses.

An attempt was made to collect 10 sequential sentences of five or more syllables from each subject's spontaneous speech for acoustic analysis. The total number of sentences available for acoustic analysis, however, was 63 at T1 and 71 at T2 out of a possible 80. Each sentence was fed to a Kay Elemetrics' Computerized Speech Laboratory (CSL) 4300B (Lincoln Park, NJ) via a Sony TCD-D100 (Sony, Tokyo, Japan) digital audiotape player, with a sampling rate for analysis set at 22050 Hz. Two parameters were measured from the signal: fundamental frequency range (F0 range) and amplitude range (Amp range). Segments that were characterized by voice breaks or vocal fry were excluded from the acoustic analyses to ensure accuracy of measurements. Intrarater reliability for the complete set of the acoustic analyses was 0.97, using a Pearson correlation test.

### Clinical Evaluation

Table 2 presents the results for each of the eight participants for the SAS, VAPRS, and for acoustic measures at T1 and T2. Overall, group means improved from T1 to T2 for all measures included. A set of separate, nonparametric Wilcoxon Signed Ranks tests between T1 and T2 scores was conducted for all measures, with  $\alpha$  set at 0.05. Results indicated that the group mean for the SAS improved significantly (T1  $M = 3.75$ , T2  $M = 4.75$ ,  $p < 0.05$ ). The group means for the VAPRS also improved from T1 to T2 but this difference failed to reach statistical significance. Of the two acoustic measures, the group mean for the F0-range parameter increased significantly (T1  $M = 52.80$ , T2  $M = 80.34$ ,  $p < 0.05$ ). The group means for the Amp range also improved slightly from T1 to T2, but the difference was not statistically significant.

The individual speech acts count, based on the pragmatic protocol, also showed an increase from T1 to T2. Specifically, the mean turn-taking counts for the individual participants increased from 1.75 ( $SD = 0.71$ ) to 4.25 ( $SD = 3.01$ ) and the mean initiation counts increased from 1.00 ( $SD = 1.12$ ) to 2.25 ( $SD = 1.28$ ). These group mean increases were statistically significant ( $p = 0.034$ ;  $p = 0.08$ , respectively).

Inspection of the individual data also revealed a trend for improvement between T1 and T2 for the majority of the individuals. Seven of the eight participants improved their SAS scores, and six participants improved on the VAPRS. On the F0-range measure, seven participants improved; on the Amp-range measure, five improved; and on the speech-acts counts, six improved.

**Table 2.** Results for the Participants in the Therapy Group

Participant	Pretreatment (T1)				Posttreatment (T2)			
	VAPRS	SAS	Acoustic analysis		VAPRS	SAS	Acoustic analysis	
			F0 range	Amp range			F0 range	Amp range
1	63	4	67.57	15.57	74	5	52.74	10.54
2	81	5	66.86	14.79	76	5	112.56	11.59
3	51	4	54.29	10.79	58	5	79.38	16.96
4	44	3	23.29	10.76	64	4	53.50	12.04
5	63	5	86.50	14.54	80	6	121.02	17.14
6	73	3	44.79	9.42	46	5	65.25	13.99
7	56	2	37.02	15.82	63	3	77.73	14.18
8	55	4	42.12	14.55	82	5	80.56	19.66
M	60.75	3.75	52.80	13.28	67.88	4.75	80.34	14.51
SD	11.96	1.04	20.18	2.52	12.33	0.89	25.10	3.17

Note. VAPRS = Visual Analogue Perceptual Rating Scale (Schiffman et al., 1981); SAS = Speech Assessment Scale (Johnson, 1975; McGarr & Osberger, 1978; Ramig, Countryman et al., 1995; Ramig, Pawlas, & Countryman, 1995); F0 range = fundamental frequency range; Amp range = amplitude range.

## DISCUSSION

Speech therapy for patients with PD is conducted in various forms (Schulz & Grant, 2000). These therapy programs focus on different aspects of speech, including loudness, pitch, articulation, respiration, and speech rate. The purpose of the present study is to describe an additional treatment program for patients with PD. This program is unique in that it combines known elements from other therapy programs with a group setting. These elements include exercises from the LSVT program, direct work on communication skills in group settings, and external visual cues, as well as collaboration between an SLP and a social worker for group therapy. The literature relates two approaches for collaboration between the two professions. The first approach is within multidisciplinary teams who treat patients with communication disorders individually (Lehmann & Krebs, 1991). The second, less reported, approach has the two professionals serving as co-leaders of therapy groups in health settings (Rosenfeld, 1982). The collaboration between the social worker and the SLP in our group involved ongoing direct work to improve speech intelligibility, accompanied by discussion on communication difficulties.

On the basis of our initial findings, it appears that such a model can be implemented for clinical purposes. Our clinical assessment demonstrated an objective improvement in all measured parameters. The participants increased the number of speech acts that they initiated in spontaneous conversation and they reported better perceptions of their speech intelligibility and communication skills (as reflected in their SAS and

the VAPRS scores). These subjective reports were supported by the results of the acoustic analyses. The group program was perceived as a successful treatment approach by both participants and leaders. It should be noted, however, that although most of the participants exhibited similar improvement patterns, two participants demonstrated a different individual pattern. This probably illustrates the known clinical variability among patients with PD (Ramig, Fox & Sapir, 2004). It is beyond the scope of this study to evaluate treatment efficacy, but it appears that these preliminary observations provide an optimistic basis for further clinical research.

The LSVT program is an intensive therapy administered individually. The benefit of this therapeutic approach is well documented (Ramig et al., 2004). Our study suggests that incorporating elements from the LSVT program into a group setting might also be beneficial. Most patients reported that performing the core exercises in a group setting allowed them to perform better. For many patients, increasing the loudness of speech in a group setting was perceived as more natural than doing it in isolation. One participant remarked that "practicing these exercises with other people was much more fun than practicing them alone." Because of the nature of the particular group in our study, a friendly competition developed among the group members, which assisted in improving voice loudness and duration. In contrast, one limitation of this approach is that it does not allow for direct and objective feedback on voice loudness and duration of production for each patient. This limitation is inherent in any group setting because the therapist is unable to monitor all patients simultaneously. Because all members of the group had completed

individual speech therapy, however, most of them were able to monitor themselves or receive feedback from other members of the group.

External visual cues have been shown previously to be an effective tool for facilitating and improving motor functions of people with PD (Georgiou et al., 1993; Ramig et al., 2004; Rubinstein et al., 2002). To the best of our knowledge, the present program is the first to include this element in a speech-therapy program. The cues were used in all speech situations, excluding the core exercises, and included printed signs on which were written "loud voice," "slow rate," and "wide-open mouth." These cues were intended to improve speech intelligibility. Although our study does not allow for a direct conclusion that these cues were effective, our initial observations indicate that the cues improved speech performances while allowing for continuous interaction among members of the group. Furthermore, as the group sessions progressed, there was an increase in the nature and number of speech acts (speech initiation and turn taking) among the participants. This may partly be explained by increased intimacy, which is an inherent development sequence in groups (Tuckman, 1965). Moreover, participants spontaneously and positively evaluated one another's speech ("I understand you much better than a few weeks ago." "Your speech is loud and clear."). This positive feedback from fellow participants regarding speech intelligibility also may have encouraged participation in group discussions. Clarity of speech also may have been influenced by the fact that the group setting itself functioned as an external cue for each patient and provided a stage for the individual participant, with group members serving as one another's audience. According to the participants, performing in public motivated them to concentrate on the clarity of their speech.

Improving communication skills in social settings also assisted in regaining the lost art of conversation. Group discussions provided an opportunity for practice in a supportive environment. This environment allowed the patients to relate to the emotional aspects in communication difficulties in everyday life. The participants provided each other with emotional support and understanding about the embarrassment, frustration, and lack of confidence they frequently experienced as a result of unclear speech, and group members suggested ways of coping with these feelings.

The group was led by an SLP in collaboration with a social worker who specializes in group work with people with PD and their families. The group leaders attended not only to the content of the discussion but also to the way in which the feelings, advice, and opinions were expressed. The group leaders ensured that all group members were encouraged to participate in practice and discussion. Working in collaboration and using this treatment model enabled the use of increasingly complex speech therapy techniques while relating to the practical and emotional aspects of speech and communication difficulties in everyday life. By providing the participants with opportunities to share their experiences with

others with similar difficulties while reinforcing learned speech and voice techniques in a supportive environment, we attempted to narrow the gap between clinical and everyday speech situations.

Achieving change and solidifying the learning of new behaviors requires effective practice (Bandura, 1977). Practicing communication techniques was achieved through role playing, talking about a specific topic with participation of all the group members, and focusing on body language as an additional tool in communication. For example, during the session that addressed coping with difficulties in telephone conversations, the group practiced turn taking and initiation as couples using cell phones in front of the others. The patients reported that this role-playing was a helpful tool for practicing speech on the telephone in a variety of situations and that it enabled them to broaden their scope in using the telephone. Body language is another helpful tool in clarifying communication, and the participants were encouraged to use gestures while speaking during face-to-face communication and during group discussions.

At the beginning of the program, the patients were asked to rate their communication difficulties in everyday situations; this formed the basis for the topics for discussion in the group sessions and facilitated active involvement of all patients. For future groups, the topics may need to be adjusted to meet the members' requirements and interests

Our clinical observations and preliminary results indicate that our group therapy program might be appropriate for improving the communication skills of people with PD. Further research with a larger number of patients and with different group settings should be conducted. Moreover, the inclusion criteria should be designed to identify possible factors that could affect therapy success, such as severity of PD, physical limitations, cognition ability, level of speech intelligibility, personality traits, and prior experience with speech therapy. Finally, future research is needed to establish the extent of long-term maintenance following similar clinical interventions. We hope that this preliminary report will facilitate additional clinical and theoretical interaction among professionals in the field to further evaluate and develop the suggested therapy scheme for people with PD.

#### ABOUT THE AUTHORS

**Yael Manor**, MA, is a speech-language pathologist at the Movement Disorders Unit, Department of Neurology, at the Tel-Aviv Sourasky Medical Center. Her research interests include speech and swallowing disorders in adults with neurological disorders. **Jennie Posen**, MSW, is a senior social worker in the Sourasky Medical Center and a social worker in the Movement Disorders Unit Department of Neurology, with clinical experience in individual and group work with people with PD and their families. **Ofer Amir**, PhD, is an assistant professor in the Department of Communication Disorders at Tel-Aviv University. His current research and clinical interests include voice disorders and fluency disorders. **Nechama Dori**, MSW,

is a senior social worker and coordinator and supervisor of multidisciplinary group work in the hospital group-work unit. **Nir Giladi**, MD, is the director of the Movement Disorders Unit, the Neurology Department, at Tel Aviv Sourasky Medical Center and a senior lecturer at Sackler School of Medicine at Tel Aviv University. Contact: Yael Manor, Movement Disorders Unit, Tel Aviv Sourasky Medical Center, 6 Weitzman St., Tel Aviv, Israel 64239; e-mail: manor\_yael@hotmail.com

## REFERENCES

- Ackermann, H., Konczak, J., & Hertrich, I. (1997). The temporal control of repetitive articulatory movements in Parkinson's disease. *Brain and Language*, *56*, 312–319.
- Adams, S. G. Hypokinetic dysarthria in Parkinson's disease. (1997). In M. R. McNeil (Ed.), *Clinical management of sensorimotor speech disorders* (pp. 261–286). New York: Thieme.
- Aronson, A. E. (1990). *Clinical voice disorders*. New York: Thieme-Stratton.
- Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioral change. *Psychological Review*, *84*, 191–215.
- Coates, C., & Bakheit, A. M. (1997). The prevalence of verbal communication disability in patients with Parkinson's disease. *Disability and Rehabilitation*, *19*, 104–107.
- De Angelis, E. C., Mourao, L. F., Ferraz, H. B., Behlau, M. S., Pontes, P., & Andrade, L. (1997). Effect of voice rehabilitation on oral communication of Parkinson's disease patients. *Acta Neurologica Scandinavica*, *96*, 199–205.
- De Swart, B. J., Willemse, S. C., Maassen, B. A., & Horstink, M. W. (2003). Improvement of voicing in patients with Parkinson's disease by speech therapy. *Neurology*, *60*, 498–500.
- Georgiou, N., Lansek, R., Bradshaw, J. L., Phillips, J. G., Mattingley, J. B., & Bradshaw, J. A. (1993). An evaluation of the role of internal cues in the pathogenesis parkinsonian hypokinesia. *Brain*, *116*, 1575–1587.
- Giladi, N., Treves, T. A., Paleacu, D., Shabtai, H., Orlov, Y., Kandinov, B., et al. (2000). Risk factors for dementia, depression, and psychosis in long-standing Parkinson's disease. *Journal of Neural Transmission*, *107*, 59–71.
- Hammen, V. L., & Yorkston, K. M. (1996). Speech and pause characteristics following speech rate reduction in hypokinetic dysarthria. *Journal of Communication Disorders*, *29*, 439–444.
- Hoehn, M., & Yahr, M. (1967). Parkinsonism: Onset, progression, and mortality. *Neurology*, *17*, 427–442.
- Johnson, D. D. (1975). Communication characteristics of NTID students. *Journal of Academic Rehabilitative Audiology*, *8*, 17–32.
- Johnson, J. A., & Pring, T. R. (1990). Speech therapy and Parkinson's disease: A review and further data. *The British Journal of Disorders of Communication*, *25*, 183–194.
- Kerschman, K., Pankl, W., & Auff, E. (1998). Speech disorders in Parkinson patients. *Wiener Klinische Wochenschrift*, *110*, 279–286.
- Le Dorze, G., Dionne, L., Ryalls, J., Julien, M., & Ouellet, L. (1992). The effects of speech and language therapy for a case of dysarthria associated with Parkinson's disease. *European Journal of Disorders of Communication*, *27*, 313–324.
- Lehmann, W., & Krebs, H. (1991). Interdisciplinary rehabilitation of the laryngectomy. *Recent Results in Cancer Research. Fortschritte der Krebsforschung. Progres Dans les Recherches Sur le Cancer*, *121*, 442–449.
- Logemann, J. A., Fisher, H. B., Boshes, B., & Blonsky, E. R. (1978). Frequency and concurrence of vocal tract dysfunctions in the speech of a large sample of Parkinson patients. *The Journal of Speech and Hearing Disorders*, *42*, 47–57.
- McGarr, N. C., & Osberger, M. J. (1978). Pitch deviancy and intelligibility of deaf speech. *Journal of Communication Disorders*, *11*, 239–247.
- McNamara, P., & Durso, R. (2003). Pragmatic communication skills in patients with Parkinson's disease. *Brain and Language*, *84*, 414–423.
- Posen, J., Moore, O., Tassa, D. S., Ginzburg, K., Drory, M., & Giladi, N. (2000). Young women with Parkinson's disease: A group work experience. *Social Work in Health Care*, *32*, 77–91.
- Prutting, C., & Kirchner, D. (1987). A clinical appraisal of the pragmatic aspects of language. *The Journal of Speech and Hearing Disorders*, *52*, 105–119.
- Ramig, L. O., Countryman, S., Thompson, L., & Horii, Y. (1995). Comparison of two forms of intensive speech treatment for Parkinson's disease. *Journal of Speech and Hearing Research*, *38*, 1232–1251.
- Ramig, L. O., Pawlas, A. A., & Countryman, S. (1995). *The Lee Silverman Voice Treatment: National Center for Voice and Speech*. New York: Academic Press.
- Ramig, L. O., & Dromey, C. (1996). Aerodynamic mechanisms underlying treatment-related changes in SLP in patients with Parkinson's disease. *Journal of Speech and Hearing Research*, *39*, 798–807.
- Ramig, L. O., Countryman, S., O'Brien, C., Hoehn, M., & Thompson, L. (1996). Intensive speech treatment for patients with Parkinson's disease: short- and long-term comparison of two techniques. *Neurology*, *47*, 1496–1504.
- Ramig, L. O., Sapir, S., Countryman, S., Pawlas, A. A., O'Brien, C., Hoehn, M., et al. (2001). Intensive voice treatment (LSVT®) for patients with Parkinson's disease: A 2-year follow up. *Journal of Neurology, Neurosurgery, and Psychiatry*, *71*, 493–498.
- Ramig, L. O., Sapir, S., Countryman, S., Fox, C., (2001). Change in vocal loudness following intensive voice treatment (LSVT®) in individuals with Parkinson's disease: A comparison with untreated patients and normal aged-matched controls. *Movement Disorders*, *16*, 79–83.
- Ramig, L. O., Fox, C., & Sapir, S. (2004). Parkinson's disease: Speech and voice disorders and their treatment with the Lee Silverman Voice Treatment. *Seminars in Speech and Language*, *25*, 169–180.
- Ramig, P. R., & Bennet, E. M. (1997). Consideration for conducting group intervention with adults who stutter. *Seminars in Speech and Language*, *18*, 343–355.
- Robertson, S. J., & Thomson, F. (1984). Speech therapy in Parkinson's disease: A study of the efficacy and long term effects of intensive treatment. *The British Journal of Disorders of Communication*, *19*, 213–224.
- Rosenfeld, M. (1982). A group for spouses of speech and language impaired patients. In A. Lurie, G. Rosenberg, & S. Pinsky (Eds.), *Social work with groups in health settings* (pp. 67–73). New York: Prodist.
- Rubinstein, T. C., Giladi, N., & Hausdorff, J. M. (2002). The power of cueing to circumvent dopamine deficits: A review of physical therapy treatment of gait disturbances in Parkinson's disease. *Movement Disorders*, *17*, 1148–1160.
- Schiffman, S., Reynolds, M. L., & Young, F. W. (1981). *Introduction to multidimensional scaling*. London: Academic Press.
- Schulz, G. M., & Grant, M. K. (2000). Effects of speech therapy and pharmacological and surgical treatments on voice and speech in Parkinson's disease: A review of the literature. *Journal of Communication Disorders*, *33*, 59–88.
- Scott, S., & Caird, F. L. (1983). Speech therapy for Parkinson's disease. *Journal of Neurology, Neurosurgery, and Psychiatry*, *46*, 140–144.
- Scott, S., Caird, F. L., & Williams, B. O. (1985). *Communication in Parkinson's disease*. Rockville, MD: Aspen.
- Sullivan, M. D., Brune, P. J., & Beukelman, D. R. (1996). Maintenance of speech changes following group treatment for hypokinetic dysarthria of Parkinson's disease. In D. A. Robin, K. M. Yorkston, & D. R. Beukelman (Eds.), *Disorders of motor speech: Assessment, treatment and clinical characterization* (pp. 287–308). Baltimore: Brookes.
- Swigert, N. B. (1997). *The source for dysarthria*. East Moline, IL: LinguiSystems.
- Tuckman, B. W. (1965). Development sequence in small groups. *Psychological Bulletin*, *63*, 384–399.
- Yalom, I. (1985). *The theory and practice of group psychotherapy*. (3rd ed.). New York: Basic Books.
- Yorkston, K. M. (1996). Treatment efficacy: Dysarthria. *Journal of Speech and Hearing Research*, *39*, S46–S57.