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Voice Therapy Techniques in Combination with the Group Therapy Setting for Individuals with Parkinson's Disease

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Voice Therapy Techniques in Combination with the Group Therapy Setting for Individuals with
Parkinson's Disease

Zoë Sommers

The University of Akron

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Abstract

This report aims to provide background information related to voicing in Parkinson's Disease (PD), review the various therapeutic approaches used to benefit individuals diagnosed with PD, and examine how voice impairments affect the lives of individuals with PD. Specifically, therapy techniques focusing on voice and techniques applied in the group therapy setting will be reviewed. PD has a multitude of consequences on an individual's life, and speech is an area that is greatly affected. This project will highlight some of the interventions that can positively impact the lives of those with Parkinson's Disease and reflect on how the group therapy setting can enhance their therapy experience.

Research in support of this project has been gathered through on-site evaluation and therapy observations in addition to a literature review; this permits a comparison between previous findings and what is practiced in the clinical setting. Additionally, to measure the impact of voice impairments on the quality of life of individuals with PD, an alternative version of the Voice Handicap Index was administered. Using these methods, I was able to gain valuable insight in the role of the speech-language pathologist in treating clients with PD through my observation of a diagnostic evaluation, as well as through leading multiple sessions through the Voice Clinic.

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Parkinson's Disease

Parkinson's Disease (PD) is a progressive disorder caused by changes in the neurons of the brain resulting in a shortage of dopamine, which is needed for the basal ganglia to efficiently execute motor functioning (Seikel, Drumright, & King, 2015). These changes affect muscle control throughout the body, which is often reflected by tremors, muscle rigidity, and/or bradykinesia (Parkinson's disease, 2018). Jankovic (2008) shares that clients with PD typically present cognitive decline as well, such as slowed processing and tip-of-the-tongue phenomenon. Most individuals with PD begin experiencing symptoms sometime around 55-75 years of age, although earlier onset of the disease is possible (Jankovic, 2008). Sex can also have an influence on a person's susceptibility to PD as the disease is more common in men (Parkinson's disease, 2018). When considering the effects of Parkinson's Disease on patients, it is crucial to remember the concept of individual differences. Patients sharing this diagnosis vary in sex, age at onset, and the range of severity in their symptoms, to name just a few. There is no determined cause of Parkinson's Disease; however, research suggests that genetics and environmental factors may have an influence on its development (Parkinson's disease, 2018). Although this change in muscular functioning may be more obvious in larger muscle groups, it is imperative to acknowledge the influence it has on other systems that play a crucial role in one's quality of life, such as respiration and phonation.

The Functional Speech Mechanism

Respiration. During inhalation, the diaphragm, arguably the most significant muscle involved in respiration, works with accessory muscles of the neck, thorax, and shoulders to expand the thoracic cavity and draw air into the lungs (Seikel, Drumright, & King, 2015). Once the lungs have acquired an appropriate volume of air, exhalation begins. Expiration, which may

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be passive or active, reduces the volume of the thoracic cavity as air leaves the lungs. The anatomy of the ribs and rib cage, formed partially by hyaline cartilage, makes it somewhat elastic, so the forces of gravity and torque acting on this system can help explain passive exhalation (Seikel, Drumright, & King, 2015). Active expiration occurs when the diaphragm works with the accessory muscles of the thorax and abdomen to push the air from the lungs, therefore, reducing the volume of the thoracic cavity (Seikel, Drumright, & King, 2015). Respiration can be viewed as the foundation needed for one to produce a voice, which is highlighted by Seikel, Drumright, & King (2015, p.183) in their text, "Respiration is the energy source that permits phonation to occur; without respiration there would be no voicing."

Phonation. Phonation occurs when the vocal folds are brought together within the larynx, or "voice box," to vibrate, which results in voicing (Seikel, Drumright, & King, 2015). The larynx sits atop the trachea, a tube running vertically in the thoracic cavity, which then branches off to aid each lung in respiration (Seikel, Drumright, & King, 2015). During expiration, air rushes out of the lungs and up through the trachea to the larynx; the vocal folds can then be brought together to vibrate, which generates one's voice (Johnson, 2017). The intrinsic muscles of the larynx are responsible for the adduction and abduction of the vocal folds (Seikel, Drumright, & King, 2015).

Resonation & articulation. The sound that one produces through phonation can then be shaped into speech sounds, or phonemes. The sound created by the vibrating vocal folds travels through the vocal tract, which can adapt and move to shape vowel sounds (Seikel, Drumright, & King, 2015). The oral cavity, pharynx, and nasal cavity cooperate to change the sound through altering volume available in the vocal tract, therefore, influencing its resonance (Seikel, Drumright, & King, 2015). The jaw, tongue, soft palate, and lips are manipulated through

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muscular effort to shape voicing into actual speech sounds during resonance and articulation, though fixed structures such as the teeth and hard palate also play a major role (Seikel, Drumright, & King, 2015). It is important to note that some speech sounds are classified as voiceless and do not rely on phonation to be produced. Instead, air flowing through the speech mechanism creates turbulence due to interaction between the articulators to form speech sounds, such as fricatives (Seikel, Drumright, & King, 2015). During normal conversation, the articulators are constantly moving and working cohesively, lacing together speech sounds to effectively produce verbal language (Johnson, 2017).

Consequences of PD on the Speech Mechanism

Parkinson's Disease impacts muscle functioning, and the muscles responsible for proper functioning of the speech mechanism are no exception. Dysarthria, a voice disorder characterized by this lack of muscle function, is a common symptom of PD (Tjaden, 2008). Since PD can affect musculature in a variety of ways, such as rigidity, slowness or uncoordinated movements, components of the speech system may display variant consequences and severity (Ruddy & Sapienza, 2003). Scott and Caird (1983, p.140) highlight the most prevalent effects this condition has on speech, "The main features are reduced intensity of voice, a tendency to increased and unvarying pitch, monotony of speech, and an abnormal rate of speaking."

Since patients with PD experience reduced muscle movement, it comes as no surprise that this would affect the muscles responsible for respiration, phonation, and articulation. By limiting the effectiveness of the respiratory system, powering the phonatory system becomes an issue, resulting in reduced vocal loudness (Ramig, Countryman, Thompson, & Horii, 1995). It must be remembered that voice is largely dependent on breath support. If a person's posture is compromised, or the muscles of the thorax are rigid and restricting movement, the lungs will not

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be able to reach adequate air capacity; this can prevent a person from maintaining satisfactory vocal volume and cause the voice to fade during conversation (Johnson, 2017). Muscular control in the larynx is also important, as the vocal folds need to adduct fully for optimal voice production. It is common for patients with PD to achieve only partial or inconsistent adduction, resulting in hoarse, breathy speech (Ruddy & Sapienza, 2003).

Patients with PD struggle with both producing adequate speech volume and quality and precise articulation during conversation. Effective articulation requires accurate and rapid muscle movements to manipulate the jaw, tongue, lips, and soft palate in order to produce the intended phonemes. According to Johnson (2017), the articulators often have trouble keeping up with the speaker's rate of speech during conversation. Restriction in the mobility of the articulators, tremor, or bradykinesia can contribute to inaccuracies, which result in slurred speech (Johnson, 2017).

When observing these factors in combination, it is understandable as to why an individual with Parkinson's Disease may experience trouble communicating effectively. "At least 75% of the...patients with Parkinson Disease have a speech disorder that may limit their ability to function fully in society," (Ramig, Countryman, Thompson, Horii, 1995, p. 1232). This disorder can heavily interfere with a person's quality of life as the ability to communicate connects one to family, friends, and one's community.

Role of the speech-language pathologist. The speech-language pathologist holds a pertinent role in the treatment of a patient with Parkinson's Disease as this professional is responsible for the restoration and preservation of the client's communication skills. A licensed speech-language pathologist is qualified to address the speech, swallowing, and cognitive concerns, such as with memory and planning, that the client may have (Johnson, 2017).

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In addition to this, speech-language pathologists typically work closely with other treatment professionals, such as physicians and physical therapists, as well as the client's family so that the client has an effective and comprehensive treatment plan (Paul, 2014). This component of our practice is especially important in the treatment of those with Parkinson's Disease, as these patients are typically receiving treatment from several health care professionals. Information such as a client's physical therapy goals or any prescription medicine changes serve as valuable knowledge for the speech-language pathologist as he/she can then modify therapy to enhance and accommodate these treatments. Paul (2014, p.3) describes the usefulness of treatment teams, "Many professionals collaborate closely on teams with professionals from a range of other disciplines to help deliver services in a more integrated manner, so the client receives consistent feedback and reinforcement and has more opportunities for generalization."

Treatment/Intervention Options

There are several treatment options for clients with Parkinson's Disease who are looking to enhance their communication skills through speech therapy. Speech-language pathologists must be well-informed of treatment options for their clients and implement the methods that are both appropriate and likely beneficial for their patients. These interventions are often speaker-oriented; however, there are several helpful strategies that can be implemented by the speaker's communication partners, which can help prime conversational situations for optimal outcomes (Tjaden, 2008). These strategies may approach a client's voice disorder in different ways, but the ultimate goal is the same: Make the client successful in his/her communication.

LSVT LOUD®. Arguably the most commended treatment option for individuals facing dysarthria secondary to Parkinson's Disease is The Lee Silverman Voice Treatment, LSVT LOUD®. This treatment program, founded by Lorraine Ramig, Ph.D., CCC-SLP, and Carolyn

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Mead, M.A., CCC-SLP, is characterized by its intensive schedule, which mandates an attendance of 16 sessions, each lasting 50 minutes, for the duration of a month (Ruddy & Sapienza, 2003). Treatment addresses the respiratory and phonatory deficits associated with PD and introduces the concept of “thinking loud” and increasing effort levels to overcome these obstacles (Ramig, Countryman, Thompson, & Horii, 1995). Vocal fold adduction is targeted by tasks such as sustained phonation, and this strong voicing is carried over to tasks for reading and speaking (Ramig, Countryman, Thompson, & Horii, 1995). Researchers theorize that improvement in motor speech output with LSVT LOUD® results from patients learning to rescale the intensity and effort of their speech in combination with an intensive treatment plan that includes practice and feedback (Ramig, Bonitati, Lemke, & Horii, 1994; Ramig, 1995; Ramig, Countryman, Thompson, & Horii, 1995; Schmidt, 1975, 1988). Therapy is intended to carry over to the situations of clients’ everyday lives through implementing a frequent treatment schedule composed of high-effort speech practices (Watts, 2016). There has even been improvement in other speech characteristics aside from vocal volume, such as articulation and breathiness, reported in some clients who receive this treatment (Watts, 2016). This treatment option has shown its effectiveness in its long-lasting results for clients after completing the therapy program (Johnson, 2017).

SPEAK OUT! ® / The LOUD Crowd ®. Another treatment option for individuals with Parkinson’s Disease is the SPEAK OUT! ® program. This program is founded in the treatment strategies of Dr. Daniel R. Boone, a speech-language pathologist who specialized in the treatment of voice disorders (Greenhaw, n.d.b). This program focuses on intensifying vocal volume and overcoming obstacles in regard to a client’s prosody of voice (Watts, 2016). The emphasis of this program is the concept of “intent” which Watts (2016) defines as “A purposeful

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cognitive focus in which the patient would direct attentional capacities on speech production.”

Speech, voice, and cognition are recognized as important entities through the incorporation of activities that address each of these areas, forming a more comprehensive treatment plan (Greenhaw, n.d.b). Instead of applying a set number of 45-minute therapy sessions for patients to attend, the SPEAK OUT! ® program monitors how quickly the patient is making progress with their goals (Watts, 2016).

The LOUD Crowd ® is an extension of this program. This group therapy plan is used as an effort to maintain treatment results in vocal functioning after a client's completion of the SPEAK OUT! ® program (Greenhaw, n.d.a). According to a study conducted by Watts (2019), the SPEAK OUT! ® treatment effects monitored during follow-ups remained in a manner similar to the long-term effects of LSVT LOUD® treatment. Both LSVT LOUD® and SPEAK OUT! ® programs demonstrate that intensive voice therapies concentrated in increasing patients' vocal efforts are beneficial to the treatment of dysarthria that is secondary to PD (Watts, 2019).

Augmentative alternative communication (AAC). Other intervention can occur using augmentative and alternative communication (AAC) devices. These devices are supplemental and aim to enhance intelligibility and understanding of the client in everyday life. AAC device selection is solely based on the needs of the client, so options may differ between individuals. A common selection for this type of intervention is a personal voice amplification device, which can be especially effective for those with softer speech (Johnson, 2017). However, amplification systems do not overcome other characteristics of dysarthria, such as breathiness and slurred speech (Ruddy & Sapienza, 2003). Something as simple as writing out messages with a pen and a notebook can be useful to assist in communication if the individual is capable of fine motor coordination (Ruddy & Sapienza, 2003). Alphabet boards or picture boards/booklets are other

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viable, low-tech options that can help supplement conversation with visual cues and increase comprehension (Tjaden, 2008). Depending on the impact that the disease has on a client's communication, high-tech AAC technology may be a better option. These systems are electronic and allow for a more expansive storage of vocabulary; however, these devices can be costly (Ruddy & Sapienza, 2003).

Medication. Individuals diagnosed with Parkinson's Disease should speak with their health care providers about treatment options to help maintain patients' quality of life during disease progression. Interventions can include speech therapy, physical therapy, and prescription medication intervention. While the use of medication plays an important role in the treatment of PD, there is no consistent effect of medication on speech symptoms associated with the disease (Ruddy & Sapienza, 2003). Oftentimes, patients receiving medicinal treatment do not experience improvement in their speech, voice, or swallowing from medication alone (Johnson, 2017). For optimal results, clients should implement speech therapy intervention supplementary to a pharmaceutical plan to increase functioning and quality of life (Tjaden, 2008).

Communication strategies. It is relevant to acknowledge communication strategies that can be used to elicit successful conversation both by individuals with PD and their communication partners. There are multiple ways for individuals with PD to prime conversational situations to help ensure that they will be understood by others. Patients can help prepare their communication partners by introducing the topic of conversation, which has been shown to help with understanding at an average of at least 10% (Tjaden, 2008). Many individuals naturally use gestures during conversation; these gestures can help enhance intelligibility for those with PD capable of this type of motor coordination by an average of 25% for predictable sentences (Tjaden, 2008). Individuals with PD should observe their

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communication partners to check their understanding of conversational messages and be prepared to resolve any confusion using strategies such as repetition, elaboration, or rephrasing for clarification (Tjaden, 2008).

Family and friends' support and understanding can have a substantial impact on interactions with individuals with PD. There are several tips that loved ones can use in communication situations. Having patience in these interactions is essential, as those with PD can take longer to express their thoughts and feelings through speech (Johnson, 2017). Providing an accommodating communication environment can also be helpful. This can be accomplished through efforts such as removing background noise so that conversation participants can hear each other more clearly, as well as directly looking at the individual when speaking (Johnson, 2017).

The Voice Clinic at The University of Akron

A sector of the Audiology and Speech Center at the University of Akron, the Voice Clinic is supervised by Mrs. Susan Ruhlin, M.A., CCC-SLP. Mrs. Ruhlin oversees several graduate clinicians each semester, and she works with these students to provide weekly group therapy sessions throughout the year for individuals with Parkinson's Disease. By attending weekly group therapy sessions, I have learned not only from Mrs. Ruhlin, but also from several students who have each introduced creative, new ideas to the group. Each graduate clinician is assigned to several clients from the group, making him/her responsible for data keeping, tracking progress, and writing treatment notes to be filed for each client.

The therapy practices used during these group sessions to address the clients' deficits are modeled after several approaches to voice treatment for those with Parkinson's Disease. It is

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important to acknowledge that Parkinson's Disease affects patients differently and leaves clients with varying symptoms and severity from the disease. Mrs. Ruhlin has described it as a disease displaying different shades in those whom it affects. The clinicians collaborate on appropriate techniques to address the varying needs and severities of symptoms of the clients that attend this group therapy.

I have observed these sessions throughout the past three semesters. During these observations, the group's participants have varied. Attendance has varied from four to seven clients with each group therapy session lasting 90 minutes. Physical arrangement of the room focused on providing an inclusive environment for those in attendance by allowing participants to be seated around the perimeter of a large table.

When contemplating treatment options, intensive therapy plans require frequent sessions that, although effective, can be unrealistic for some clients. These treatment plans are often costly and inconvenient in consideration of clients' daily lives. The weekly group sessions held by the Voice Clinic help to address these issues.

Diagnostic Evaluation

To further understand the role and responsibilities of the practicing speech-language pathologist, I observed a diagnostic evaluation at the University of Akron's Audiology and Speech Center. This was a beneficial experience, as it gave me some insight to what exactly a speech pathologist is looking for before therapy can start. During this evaluation, the supervising clinician was accompanied by two graduate clinicians who helped administer some of the tests during the evaluation. The diagnostic evaluation included an interview of the client to determine case history, questionnaires to determine the impact of the client's disorder on his quality of life,

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and a test to assess cognition. The clinicians also performed an examination to observe the structure and functioning of the client's oral mechanism. They made sure to record the client's vocal sound level. The client sought out services from the campus clinic with the hope of improving his communication skills through speech therapy. It is important to note that the client's spouse was in attendance and provided information about the patient's disorder from a different perspective.

The clinicians began the session by interviewing the client and his wife. This case history interview served to provide information about the client, whether that be medical information, how his diagnosis has affected him and those around him, any changes he has been experiencing, major complaints, or other information (Paul, 2014). This portion of the session also provided the clinicians with the opportunity to build a trusting relationship with the client by allowing the clinicians to act as active listeners and be prepared to answer questions regarding communication disorders (Paul, 2014). The clinicians strategically asked open-ended questions so that the client and his wife were free to discuss their priorities surrounding the communication disorder; however, close-ended questions were used as well, especially when inquiring about more specific information (Paul, 2014). By utilizing open-ended questions, the client gained an active role in the interview portion, which helped to create a more open and trusting environment (Paul, 2014). It is important for clinicians to possess all the necessary information before they are able to effectively treat a client, so establishing trust and promoting open conversations is significant.

The Index of Independence in Activities of Daily Living (ADL) Scale was implemented during this evaluation. The clinician read off various daily life tasks to the client, and the client was to describe his ability to complete those tasks to the clinician. The clinician then scored

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these abilities according to the scale. ADL tasks included activities such as eating, dressing, bathing, and walking (Katz, 1983). Another measure that goes hand-in-hand with the Index of Independence in ADL Scale is the Instrumental Activities of Daily Living (IADL) Scale. This was facilitated in the same manner as the Index of Independence in ADL Scale, with the client describing his ability to complete certain tasks. IADL tasks can include activities such as dialing the phone, driving, doing laundry, and shopping (Lawton & Brody, 1969).

Three measures were utilized by the clinicians to survey the client's experiences with his voice disorder in daily experiences. The first item used was the Communication Effectiveness Index (CETI), which allowed the client's spouse to gauge how efficient the client is in sixteen different communication situations currently compared to before the voice disorder progressed (Lomas, Pickard, Bester, Elbard, Finlayson, & Zoghaib, 1989). This helped the clinician gauge the effects of the voice disorder from a different perspective. This perspective showed some insight as to how those close to the client felt about his voice disorder. The second item was the Communicative Participation Item Bank (CPIB), which allowed the client to rate the extent to which his voice disorder affects his participation in ten different communication situations (Baylor, Yorkston, Eadie, Kim, Chung, & Amtmann, 2013). The Voice Handicap Index (VHI) was also implemented during this evaluation. This questionnaire addresses the physical, emotional, and functional effects of the client's voice disorder (Jacobson, 1997). The VHI will be discussed in more detail in this essay.

The Montreal Cognitive Assessment was also implemented during this session. This quick assessment aims to gauge the patient's cognitive abilities by having the client complete a number of tasks associated with multiple areas of cognition, including visuospatial/executive functioning, naming, memory, attention, language skills, abstract thought, delayed recall, and

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orientation (Nasreddine, 2010). A client's accuracy during each subtest determines the score for each task. The sum of these scores are then used to determine whether a cognitive impairment is mild, moderate, or severe given the assessment's score ranges (Nasreddine, 2010).

Goals for the Group

For those practicing speech-language pathology, the formulation of clear and specific goals for clients are very important to regularly track client progression towards those goals. For those participating in group therapy sessions held by the Voice Clinic, there are several important goals that clients work towards in each session of therapy. Although each client participating in group therapy for the Voice Clinic has specific individualized goals, the general goals and reasoning for therapy can be reflected by the following objectives. Long-term goals focus on the general communication improvements clinicians ultimately want the client to gain from attending therapy (Paul, 2014). According to graduate clinician Madeline Petrich, who worked with the group during the Fall 2019 sessions, the long-term goals for the group were as follows: "Clients will attain a functional foundation for support of: 1) age-appropriate cognitive performance, 2) conversational intelligibility with appropriate volume and articulation skills demonstrating satisfactory breath stream management, 3) relaxation techniques to reduce tension, and 4) socially accepted group interaction." Short-term goals refer to the specific steps that will help a client work towards achieving their long-term goals. These written behavioral objectives include the observable action, the condition in which the client is to perform the action, and how well the client must perform that action before the short-term goal is accomplished (Paul, 2014). Madeline Petrich also spelled out the general short-term objectives for the group, which included the following: "1) Clients will maintain/improve individual peak flow meter score throughout the semester; 2) Clients will demonstrate satisfactory conversational

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performance with regard to rate, articulatory precision, and volume, with minimal cueing as judged by the clinician, and 3) Clients will maintain individual timed duration for sustained 'ah' task in three trials per session.”

Session Activities

The group therapy sessions held by the Voice Clinic aim to assist clients in making progress with their goals, both short-term and long-term. Each session incorporates activities designed for weekly data collection to help monitor client's progress. The activities created by the graduate clinicians are tailored around the goals of the group, as well as clients' individual needs. These activities aim to promote client engagement and participation, as well as provide new strategies for our clients to use for speech outside of the clinic.

Discussion component. The power of conversation is an asset to the group therapy setting; it provides the opportunity for therapists to facilitate therapy strategies and efforts in an environment that is more naturalistic for the client (Paul, 2014). Tjaden (2008) reflects on the importance of this departure from the typical clinical setting, “The importance of practicing new approaches to talking away from the formal clinic setting is especially important for persons with PD, as poor generalization from the clinic to more naturalistic, conversational situations has long been a concern in this population.” At the start of each therapy session, the clinicians facilitated group conversation by encouraging participants, clinicians, and clients alike, to share something with the group, focusing on events the past week or future events. This allowed for connections with others in the group, as well as, the opportunity to bring up any symptom concerns, individual feelings, and offer advice.

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The graduate clinicians often used therapy tools such as conversational cards or a question ball to initiate discussions within the group. These tools provided clients with conversation topics, and participants were encouraged to expand on these topics by the clinicians. Several sessions were spent discussing the content in the "Living With Intent" packet, a resource from The LOUD Crowd® provided by Parkinson Voice Project. This packet addressed many of the complications that are faced by those with Parkinson's Disease and how to manage these obstacles, such as practicing suitable exercises, communication tips, and ensuring proper medical care (Elandary, n.d.).

Stretches. Muscle rigidity and posture deficits are well-known symptoms for patients with Parkinson's Disease (Jankovic, 2008). Clinicians facilitated group stretching at the beginning of each session to combat this rigidity and help with strengthening (Cianci, 2006). On some occasions, clients would suggest alternative stretches that they had learned from their own individual therapy sessions. These were always welcomed and incorporated into the allotted stretching time for the session. To avoid any unintentional injuries, the clinicians stressed that no one should push themselves to the point of discomfort. Each stretch continued for about 5-10 seconds. Unilateral stretches were repeated to target each side of the body.

The muscles of the neck are important to target during stretching. Muscles such as the sternocleidomastoid and the scaleni muscles were targeted to assist with head rotation and stabilization (Seikel, Drumright, & King, 2015). Stretches that include bringing the ear towards the shoulder, looking from side to side, and rolling the head from one side to the other can be effective in this.

The shoulder muscles also play a role in controlling the head and neck, as well as supporting respiration by elevating the rib cage. Muscles such as the trapezius and levator

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scapulae are important for this reason, as well as elongating the neck, while the rhomboideus major and minor muscles are crucial for supporting the upper body (Seikel, Drumright, & King, 2015). To target this muscle group, clinicians implemented stretches such as shoulder shrugs, shoulder rolls, and pinching the shoulder blades together.

Clients were reminded to keep an effective posture throughout the session, as an erect position is the most effective body posture for optimal respiration (Seikel, Drumright, & King, 2015). Because of the critical role that respiration plays in the vocal effectiveness of our clients, posture is equally as significant. The clinicians facilitate group stretches such as chair twists, clapping to each side, and toe touches to help with movement of the vertebral column, as well as focusing on posture stabilization; these muscles include the erector spinae muscles, which can be divided into the lateral, intermediate, and medial types (Seikel, Drumright, & King, 2015).

Respiratory support (peak flow meter). To produce adequate vocal function, appropriate respiratory support is crucial. To measure maximum breath flow, clients utilize a peak flow meter. Each client completes three trials with the peak flow meter where the client must perform three quick, even exhalations into the meter. After each trial, the client reads the meter's measurement and informs the graduate clinicians so that the data can be appropriately recorded. By utilizing the peak flow meter, clinicians can measure how quickly air leaves a person's lungs (How to Use..., 2014). This is especially important when considering a person's speech, as someone would need to have enough air support to produce adequate speech.

Ramig, Countryman, Thompson, and Horii discuss the importance of breath support on clients' speech production, "Reduced vocal loudness observed in Parkinson disease has been associated with limited respiratory support (Canter, 1965; Critchley, 1981) as well as reduced vocal fold adduction (Hanson et al., 1984; Smith, Ramig, Dromey, Perez, & Samandari, in press;

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Perez, Ramig, Smith, & Dromey, in press),” (Ramig, Countryman, Thompson, & Horii, 1995, p. 1233). As a person is speaking, he/she is speaking on the air being expelled from the lungs (Ruddy & Sapienza, 2003). If a person lets the air out at once, he/she will not have enough air for steady, running speech. It is also important to mention that as clients are using the peak flow meter, they must maintain adequate lip seal to prevent air from leaking out the corners of the mouth during measurements. Lip seal plays an important role in the articulation of certain speech sounds, and it is important to focus on this skill as the muscles involved in articulation are likely affected by PD (Tjaden, 2008).

Sustained phonation. Another practice applied in weekly group sessions is the sustained ‘ah’ phonation. Clinicians use this tactic to target phonation as clients are tasked with sustaining this vowel production for as long as possible. A clinician counts down to signal the group to start phonating. As clients stop, they are to raise their hands to signal to the clinicians that they are done. By doing so, the clinicians can differentiate who is stopping and when, which enables them to record their data more accurately. By focusing on phonation in this way, clinicians direct group efforts to improve vocal fold adduction and improve adequate, sustained respiratory support (Ramig, Countryman, Thompson, & Horii, 1995).

Kazoos. Like the use of the peak flow meter, client use of the kazoo in the clinical setting may be useful for working on breath control, as well as muscle coordination for lip seal. This activity also targets vocal fold adduction, as phonation is also necessary to produce a sound from the kazoo. The group performs several short songs with the kazoos, with the clinicians and clients playing together. The leading clinician for the session comes with several songs in mind, but clients are always encouraged to make suggestions. Often, songs such as “Take Me Out to

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the Ball Game” and “If You’re Happy and You Know It” are implemented, along with simple choreography to encourage gross motor movement.

Cognitive function activities. In addition to these more routine activities, the clinicians implement activities that are aimed to advance the cognitive processes of our clients. These activities target cognitive skills such as memory, word-finding, recall, association, or typically a combination of these. Clients are regularly prompted to use a loud voice when participating in these activities to integrate this increased volume into conversational settings. Depending on the activity, the group could split up into teams or members participated independently. Some activities are based on games such as *Bingo*, *Heads Up!*, and *Family Feud* to target association, recall, and word-finding. Add on memory games included sharing a fact (one’s birthday or favorite food) to be remembered by the next person with each person adding additional items. The clinicians provide activities such as citing famous movie quotes and finishing common phrasing to target recall. Clinicians implement riddles to practice problem-solving, as well.

One intervention option may work for most people, but that does not always mean it is the best option for every person. It is important to consider individual differences when planning activities for therapy session. These group activities are influenced by multiple focuses of treatment to come up with a combined treatment plan for the clients in attendance.

Personal Facilitation Experience

During my time observing these group sessions, I was offered the opportunity to facilitate two of these sessions. This gave me the opportunity to gain hands-on clinical experience as an undergraduate student. During these experiences, I had to consider what activities might be

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beneficial and learned how to tailor activities specifically for our client group. Some of the activities I implemented during these two sessions are as follows:

Around the world slideshow. One group activity utilized a picture slideshow that incorporated photos of familiar landmarks from around the world. These photos included landmarks such as Big Ben, The Louvre, Mount Rushmore, among others. I tried to create a balance between the pictures of landmarks from the United States of America and pictures from other countries. I made sure to provide verbal cues for the clients when necessary to assist with recall and word-finding, such as the name of the country or state.

Chain reaction game. Another activity was based on the TV game show, Chain Reaction. This activity required clients to work on the cognitive processes of association and word finding. The point of this game is to make a consecutive chain of words that produce two-word phrases. To set up the game, the first and last words were written on a white board for the whole group to see, with the first word at the top of the board and the last word at the bottom. Between these two words were the first letters of each word in the chain, which were listed in order to create a vertical chain. Each word formed a phrase with the word above it as well as the word below it. The group was split into two teams, and each team competed to complete the chain first. The starting team was instructed to decide if they wanted a letter added to the word under the first word or above the last word. After the letter was added, they were able to take a guess at the word. Several word chains were used, with increasing levels of difficulty.

Name that song. For this activity, I created music playlists comprised of songs that were popular during the 1950s, 1960s, and 1970s. I used these decades because many of the clients were familiar with the songs. This activity provided auditory stimuli for the clients to help with recall. I played several seconds of a song for the group, and the clients guessed the title of the

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song, the artist, or both. If the clients had trouble guessing, I would play several more seconds of the song. Verbal cues were given to assist with recall.

Jeopardy! Another group activity was based on the popular TV game show, Jeopardy! I had created a game with trivia questions tailored to meet the interests of the clients that attend the group. The categories applied in this game included Movies, Music, Sports, Bible Verses, and Miscellaneous. Each category had five questions with increasing point values from 100-500. The group was split up into two teams with the clinicians working with the clients on each team. In Jeopardy!, players are provided with statements and must determine the question. To select a statement, the starting team was instructed to pick a category and a point value. Then I read the corresponding statement and the team was given the chance to guess the question. For example, the statement could be "Eating one of these a day will keep the doctor away," and the question, "What is an apple?" If the team guessed incorrectly, the other team had a chance to guess the question and steal the points. If the other team also guessed incorrectly, then the question was open to either team to guess. I worked with the other clinicians to provide verbal cues for the clients when necessary.

Voice Handicap Index

The Voice Handicap Index (VHI) is a tool designed to analyze the impact that voice disorders have on clients in their day-to-day lives. This measure is implemented as a 30-item questionnaire that reflects the functional, emotional, and psychosocial impairments experienced by clients living with voice disorders (Jacobson, 1997). Participants are instructed to rate on a scale from 0-Never to 4-Always how often they share the experiences outlined by each statement (Jacobson, 1997). When proper protocol is followed, the VHI can be scored by adding up the numbers from each statement to find a total. This sum can then determine the extent of the

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consequences of the client's voice disorder. There are three subscales that further break down and categorize the consequences of the disorder: functional, physical, and emotional (Jacobson, 1997).

Below is a chart summarizing the scores of the Voice Handicap Index when following proper protocol (Jacobson, 1997).

Scale	Mild	Moderate	Severe
Functional	>10	>12	>18
Physical	>15	>18	>22
Emotional	>8	>13	>20
Total	>33	>44	>61

Alternative administration of the VHI. During my observations of the group sessions held by the Voice Clinic, I was permitted to administer the Voice Handicap Index (VHI) to our clients. I believed that this measure would reflect clients' feelings surrounding their voice disorders and present an opportunity for group participants to discuss what is like living with their voice impairments. Before beginning to administer the VHI, I made time for an open discussion about the questionnaire and its intended purpose. Although this questionnaire varied from typical group activities, the clients participating in this session showed willingness to participate in support of my project. I wanted to run the questionnaire in a way that reflected the openness of our group sessions and considered the needs of all our clients; this resulted in an administration that differed from the standard format.

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In order to reserve time for weekly data collection and other goal-centered activities, the administration of this questionnaire was broken into two separate sessions held a week apart from each other. Rather than handing out a sheet for the clients to fill out on their own, statements listed on the VHI were read aloud to the group. Clients were instructed to raise their hands if they felt that the statement applied to them. I then allotted time for group discussion regarding each statement when clients could verbally expand on their decision to agree or disagree. Used in this way, the VHI engaged group participants in conversation while providing an opportunity to use a strong, loud voice for discussion. This format was considerate of our clients, some of whom struggle with fine motor skills, such as writing, due to the progression and symptoms of their disease.

It is important to note that only four out of the five participants at the time were present for the sessions in which the VHI was administered. It is also important to note that only statements #1-28 were considered during group discussion, leaving out two statements focusing on the emotional consequences of their voice disorders. Due to the nature in which the VHI was administered, there was not a way in which to accurately rate the physical, emotional, and psychosocial subscales of the questionnaire. Instead, the VHI was used as a tool to share client experiences with their voice disorder and gauge the overall attitude that group participants shared about their voice disorders.

Table 1 below summarizes the results of the use of an alternative Voice Handicap Index.

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Table 1. Voice Handicap Index Results

Statement	Percent in Agreement	Client Discussion
1. My voice makes it difficult for people to hear me.	100%	N/A
2. I run out of air when I talk.	50%	One client shared that he compensates by repeating himself. Another client shared that he had to quit his job as a pastor because it became too difficult for him.
3. People have difficulty understanding me in a noisy room.	50%	One client shared that he had trouble hearing in this settings and experienced trouble when understanding others.
4. The sound of my voice varies throughout the day.	75%	One client expressed that the sound of his voice depends on the time of day and can often be unpredictable. Another client shared that his voice is the strongest in the morning and grows softer around noon as his medications wears off.
5. My family has difficulty hearing me when I call them throughout the house.	100%	N/A
6. I use the phone less often than I would like.	25%	One client shared that he used to enjoy using the telephone, but not anymore.
7. I'm tense when talking with others because of my voice.	75%	N/A
8. I tend to avoid groups of people because of my voice.	25%	N/A
9. People seem irritated with my voice.	25%	One client shared that his wife gets frustrated with him because of his voice.
10. People ask, "What's wrong with your voice?"	25%	One client shared that in these situations, his best advice is to be upfront and explain so that others can understand.
11. I speak with friends, neighbors, or relatives less often because of my voice.	0%	N/A
12. People ask me to repeat myself when speaking face-to-face.	100%	One client expressed that he has been asked to speak louder because others want to hear him. Another client commented that speaking loudly requires more effort than you think you need. Sometimes you feel as if you're yelling. Another client shared that he notices that he speaks softer when he is unsure.
13. My voice sounds creaky and dry.	25%	One client shared that he has trouble speaking after a long period of silence.
14. I feel as though I have to strain to produce voice.	75%	One client expressed that he experiences voice strain in crowded areas. Another client shared that he struggled with inflection.
15. I find other people don't understand my voice problem.	50%	One client shared that this misunderstanding includes his wife along with other people. People often think strictly about the physical signs of Parkinson's Disease.
16. My voice difficulties restrict my personal and social life.	50%	One client expressed that his voice caused him to quit his job as a pastor which has restricted him.
17. The clarity of my voice is unpredictable.	75%	N/A
18. I try to change my voice to sound different.	100%	N/A

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19. I feel left out of conversations because of my voice.	50%	N/A
20. I use a great deal of effort to speak.	75%	One client expressed that he has issues with projecting his voice, especially in meeting room settings.
21. My voice is worse in the evening.	25%	N/A
22. My voice problem causes me to lose income.	50%	One client reiterated the loss of his job as a pastor due to his voice.
23. My voice problem upsets me.	75%	N/A
24. I am less out-going because of my voice problem.	100%	N/A
25. My voice makes me feel handicapped.	25%	One client shared that he often feels tired as if he is not getting enough sleep.
26. My voice "gives out" on me in the middle of speaking.	50%	N/A
27. I feel annoyed when people ask me to repeat.	0%	One client commented that he feels challenged by it. He often feels annoyed with himself, or as if the other person is annoyed with him.
28. I feel embarrassed when people ask me to repeat.	0%	N/A

Note. Percent in agreement is percent out of 4 clients.

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The results of this Voice Handicap Index reflect the consequences that Parkinson's Disease has on the lives of these clients; these effects often go beyond the physical symptoms as the VHI reflects the quality of life and psychosocial properties. A client was left with the decision to leave his career as a pastor, as this job required him to speak loudly to large groups of people for extended periods of time. His voice could not suffice. Other clients discussed the unpredictability of their voices and how they performed better in some conversational settings than others. The clients discussed the challenges presented by their voice disorders and shared how they compensate to overcome these conversational barriers. Conversational partners encountered in day-to-day life often need an explanation so that they can further understand how clients' voices are affected and how to help in communication settings.

Group Facilitation

Reinforcement is a critical aspect of therapy, as it enforces the correct production of target responses by the client (Paul, 2014). There are several ways that the clinic supervisor and graduate clinicians facilitate reinforcement with the clients that attend these group therapy sessions. Social reinforcement is the most appropriate type of reinforcement for the clients, as it is suitable for the average age of the clients and their cognitive levels of functioning (Paul, 2014). Social reinforcement manifests in a variety of ways such as smiling, attention, and verbal praise (Paul, 2014). The clinicians working with this group provide their clients with specific verbal praise. For example, a clinician may praise someone for effective phonation by saying, "Good job using a clear, loud voice." This is important because it acknowledges exactly what the clients are doing correctly. By verbalizing the reinforcement, clinicians are also sharing with the rest of the group what the target behavior is, and the client receiving the praise acts as a model for behavior.

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In therapy, clients often need prompting to be reminded of target responses during activities. The clinicians provide these prompts in numerous ways, depending on the activity and the client. Nonverbal prompting can be implemented in situations such as a clinician putting her hand on her belly to remind the client to use “big belly breaths” for speech. Verbal prompting can also be useful. For example, if a client’s vocal volume is decreasing, a clinician may say something such as, “Can you say that again so everyone can hear you?” or “Use your loud voice,” to signal to a client that they need to speak more loudly. Phonemic cues, such as providing the initial sound of a word during word-finding activities, can be beneficial for clients when participating in therapy activities. This can be used as a strategy to help combat the tip-of-the-tongue phenomenon.

The clinicians employ several conversational techniques during the session to mediate discussion and encourage participation in activities for all group members. These strategies can include attending and responding to clients’ feelings so that participants feel heard (Paul, 2014). Gatekeeping during therapy activities is very important for sessions of this nature, as clinicians need to ensure that each group member is participating and no single member is overpowering the conversation (Paul, 2014). The graduate clinicians are skillful at focusing on conversation topics when the group gets off-subject as well as summarizing session activities when it is time to move on to different activities (Paul, 2014). The clinicians strategically ask open-ended questions to encourage client discussion so patients have more of an opportunity to practice using a strong, effective voice. These conversational techniques allow clients to participate in therapy in a more naturalistic way while still allowing the clinicians to guide and support clients during the sessions.

Benefits of Group Therapy

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In the field of speech-language pathology, therapists work to increase the quality of life for the patients they treat by addressing the needs associated with their communication disorders. Due to communication difficulties, it is common for patients with Parkinson's Disease to experience social withdrawal and even embarrassment (Scott & Caird, 1983). This is where group therapy comes into play. "Group therapy sessions present opportunities for the speech-language pathologist to address the social therapy goals of increasing individuals' self-confidence as communicators, increasing their sense of self-value, and finally, increasing opportunities for communication," (Manasco, 2017, p.134). This setting is a safe space for our clients.

I have personally seen the positive impact this type of therapy setting can provide for its clients. Not only does group therapy provide clients with the opportunity for socialization and networking, but also it promotes a community of support and encouragement for those in attendance. Early on in my observations, one client shared the value of this group with me, "You look forward to Wednesdays. We're here for each other." Clients can share some of the difficulties they are having with their voice disorder and other symptoms that come along with the diagnosis of Parkinson's Disease. It is common for the clients to share suggestions and coping strategies for the more taxing characteristics of PD.

"Individuals...can use the model of someone else having been through what they are going through to establish hope that they can recover," (Manasco, 2017, p.133). Although Manasco (2017) was discussing the benefits of group therapy for those with aphasia, from my observation, the message remains the same. The group therapy setting provides a safe and supportive environment for clients where they are given an opportunity to share their personal

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experiences with their condition, share advice for living with their symptoms, and contribute hope to others in the group for the chance of improvement.

In their 2018 study, Abrahamsson, Millgård, Havstam, & Tuomi compare individual and group therapy settings and found that each are successful in client improvement for VHI scores; however, it can be argued that clients participating in group therapy sessions benefit not only from an engaging environment, but also from watching others participate in therapy (Abrahamsson, Millgård, Havstam, & Tuomi, 2018). By adapting the activities of the LSVT LOUD® program to be used in a group therapy setting, Searl, Wilson, Haring, Dietsch, Lyons, and Pahwa (2011) concluded, “Statistically significant increases occurred for voice intensity, F0 maximum, and F0 range. Voice handicap scores decreased significantly and 80% of the participants were judged louder post intervention.”

The discussion and comments of group members in The University of Akron's Voice Clinic provide qualitative support for reduced participation restrictions in daily life related to group members participation in this group therapy program. This group therapy has resulted in lifelong friendships for some of those in attendance of its sessions. During early discussion in one of the sessions, a client shared that he had celebrated his birthday with another group participant and their wives over the past weekend. On another occasion, one client invited a newer participant to join him on his visit to a local hospital after the conclusion of the session. The relationships built here extend well beyond the therapy room.

A number of studies also support the positive effects of group therapy. Searl, Wilson, Haring, Dietsch, Lyons, and Pahwa (2011) showed that psychosocial benefits, such as establishing friendships and gaining support, often occur in group therapy settings.

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Manasco (2017, p.133) also discusses the benefits of the application of this type of therapy environment, "All participants in the group session, patients and speech-language pathologists alike, are equals, and everyone participates equally." This social setting can be viewed as a sort of middle ground between individual therapy sessions and conversational settings in the clients' daily lives. Therapists work with patients on using communication strategies and applying those efforts in a group conversational setting, which is much more naturalistic than the typical therapy room. Abrahamsson, Millgård, Havstam, and Tuomi (2018) suggest that clients' perception of their voice disorders may benefit from participation in group therapy. The group therapy setting provides an open environment where clients build confidence in their communication abilities while being surrounded by those who are facing the same adversities.

Conclusion

Parkinson's Disease progressively impacts a person's cognitive and physical functioning, which consequently influences the activities of daily life. Speech and communication are features of everyday life that are heavily afflicted during the development of PD; these deficits can have serious psychosocial implications on clients. Individuals with PD and their loved ones may withdraw themselves from communication settings due to these factors. Speech therapy demonstrates a significance in improving the quality of life for those receiving treatment, and there are multiple intervention and treatment options designed to improve, maintain, or supplement communication abilities. Group therapy sessions, such as the ones held by The Voice Clinic at The University of Akron, provide a supportive and understanding environment where clients can share experiences and advice amongst each other. This setting can enhance the therapy experience and help continue therapy efforts after individual treatment is completed.

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The research and information supporting this project were gathered through a literature review regarding speech therapy in its relation to Parkinson's Disease, in addition to observations of on-site, diagnostic evaluations and group therapy sessions taking place from the spring semester of 2018 through the spring semester of 2019. An alternative version of the Voice Handicap Index (VHI) was conducted during a group therapy session to reflect the functional, social, and emotional effects influenced by clients' voice disorders.

This project has also provided me with valuable clinical experience through therapy intervention observations, hands-on facilitation experience in the clinical environment, and a review of clinical resources which has contributed to a better understanding of evidence-based practice. The subject of treating voice disorders for those with Parkinson's Disease is important to the field of speech-language pathology, as therapists are expected to provide well-informed, relevant treatment practices for their clients. This report is valuable to therapists interested in learning more about treatment options for clients with PD, as well as being significant to the family and friends of those with PD by giving them a better understanding of the disease and what treatment options are available for bettering speech and communication abilities.

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