

## Research Report

# Survey of UK speech and language therapists' assessment and treatment practices for people with progressive dysarthria

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### Abstract

*Background:* Dysarthria knowledge is predominantly impairment-based. As a result, speech and language therapists (SLTs) have traditionally adopted impairment-focused management practices. However, guidance for best practice suggests that SLTs should consider the client holistically, including the impact of dysarthria beyond the impairment.

*Aims:* To investigate the current assessment and treatment practices used by UK SLTs with clients with progressive dysarthria and to identify whether these satisfy the needs of SLTs in their everyday practice. To investigate the extent to which they consider oromotor abilities, intelligibility, functional communication, participation and interaction to be important regarding assessment and treatment decisions. To explore whether management decisions are affected by level of clinical experience or settings in which SLTs work.

*Methods & Procedures:* An online survey of UK SLTs working with adults with progressive dysarthria.

*Outcomes & Results:* A total of 119 SLTs completed the survey. Respondents considered that targeting the levels of impairment, activity and participation are important in the management of clients with progressive dysarthria, as recommended by clinical guidelines and recent research. However a particularly high proportion of respondents reported the use of impairment-based assessments. Respondents reported lacking the necessary tools to target interaction in assessment and intervention. The intervention that respondents use with clients varies according to the progressive disorder and dysarthria severity. There is evidence for a trend that less experienced SLTs and those working predominantly in hospital-based settings focus on the impairment, whereas more SLTs with more experience and those based in predominantly community-based settings look beyond the impairment.

*Conclusions & Implications:* The values held by SLTs match guideline recommendations for best practice, however the clinical reality is that the assessment of progressive dysarthria remains predominantly impairment-focused. New tools need to be developed and integrated into practice to target interaction in assessment and intervention, to reduce the gap between best practice recommendations and clinical reality. Ongoing research into the effectiveness of SLT intervention with clients with progressive dysarthria is required to guide clinical management decisions.

*Keywords:* dysarthria, progressive neurological disorders, speech and language therapy, survey.

### What this paper adds

#### *What is already known on this subject?*

Guidelines for best practice recommend that SLTs should manage their clients in an holistic manner. The foundation of dysarthria knowledge is impairment-based, and SLTs have traditionally adopted impairment-focused management practices. Investigation of the current status of SLT management practice in this population is key for the foundation for further research.

#### *What this study adds*

SLTs value management practices that focus both on and beyond the impairment, in line with best-practice guidelines, although the assessments that SLTs use are predominantly impairment-based. Management decisions appear to vary according to SLT experience and setting worked in. Tools need to be developed and integrated into practice to target more functional aspects of communication, including interaction.

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## Introduction

### Background

This paper reports the results of a questionnaire survey that aimed to elicit information on the practices, views and values of UK speech and language therapists (SLTs) regarding their management of people with progressive dysarthria.

Dysarthria is a common communication disorder arising from acquired progressive neurological conditions (Yorkston *et al.* 2004) such as Parkinson's disease, multiple sclerosis, motor neurone disease and Huntington's disease. It can affect communication by virtue of reduced intelligibility and can impact upon an individual's ability to interact and participate in life situations. It has been suggested that between 19% and 100% of individuals with degenerative neurological disorders develop dysarthria (Enderby 2000). The prevalence and severity typically increases as the conditions progress.

Research on acquired dysarthria has traditionally focused on basic descriptions of acoustic and physiologic measures of speech (Duffy 2007), following on from the seminal studies by Darley *et al.* (1969a, 1969b). The tools predominantly used in UK practice to analyse speech have developed from this impairment-based perspective and specific impairments have been targeted in therapy. Until recently, clinical textbooks recommended that having identified the motor speech deficit, therapeutic activities should directly target that deficit (Hartelius and Miller 2011).

Recent research and clinical guidelines clearly identify the need for a holistic approach to dysarthria management for people with progressive conditions. The World Health Organisation's (2001) *International Classification of Functioning, Disability and Health (ICF)* defines disability as encompassing impairments, activity limitations and participation restrictions. The components of the ICF are reflected in UK clinical guidelines as evidenced through the *National Service Framework for Long-term Conditions (Neurological)* (Department of Health 2005), National Institute for Health and Clinical Excellence (NICE) guidelines (National Collaborating Centre for Chronic Conditions 2004, 2006), and the Royal College of Speech and Language Therapists (RCSLT) (2005, 2006) clinical guidelines. The clinical reality is, however, less clear. Empirical findings and published clinical tools have tended to focus on impairment features, in accordance with the early dysarthria literature, rather than on activity and participation.

In line with a shift in SLT to a more social approach to disability, it has been argued that an impairment-based perspective provides restricted insights into the nature of a disorder and its consequences and impact

(Hartelius and Miller 2011). The consideration of participation and the psychosocial impact of dysarthria are necessary to inform clinical practice, develop outcome measure frameworks and direct the decision-making of key stakeholders (Walshe and Miller 2011).

Miller *et al.* (2011) investigated the practices of SLTs working with clients with Parkinson's disease to find that SLT assessment and intervention focused on impairment in contrast to a belief that therapy should focus on activity and participation issues. Current published assessments used by UK SLTs, such as the Frenchay Dysarthria Assessment (Enderby and Palmer 2008) and the Dysarthria Profile (Robertson 1982) are still predominantly impairment-focused despite an increasing interest in participation and the psychosocial impact of dysarthria (Baylor *et al.* 2011, Walshe and Miller 2011). Similarly, oromotor assessments, informal impairment-based measures, are commonly used by SLTs in dysarthria assessment (Gerratt *et al.* 1991, Miller *et al.* 2011) despite poor correspondence with speech performance and little support for their use (Weismer 2000, Clark 2003). Oromotor work has also been reported to be a frequent component of treatment for dysarthria (Mackenzie *et al.* 2010) despite insufficient empirical evidence to evaluate its translation into functional speech improvements (Hodge 2002, Clark 2003).

There is currently a lack of knowledge about what SLTs offer clients with progressive dysarthria in the UK regarding assessment use, intervention approaches, whether or not available tools are satisfactory, and what SLTs value in terms of aspects of communication at the level of impairment, activity and participation.

The survey reported in this paper was developed in order to identify whether currently available assessments and interventions satisfy the needs of SLTs in their everyday practice. The results will show how closely SLTs are managing clients holistically, considering the impairment, activity and participation as outlined by the ICF and as recommended in clinical guidelines. Research can then be directed according to the clinical need as made apparent through the responses in this survey, to lead to the development of clinically useful tools. Also, by identifying the interventions that clinicians are using with this client population, future research can be directed to investigate their effectiveness, which can be used to support or refute clinical practice. In sum, results from this survey can support the development of clinical services and future research questions.

There is some evidence that management decisions vary according to the settings in which SLTs work and the levels of experience they have working with clients with progressive dysarthria (Palmer 2005). These two variables were explored in the current study to gain an

appreciation of their impact on the management of this client group.

### *Aims*

The aim of the research was to gain insight into the clinical management of clients with progressive dysarthria and the importance SLTs place on aspects of impairment, activity and participation. The research questions addressed in the current work were (1) to identify the range of assessments used in current clinical practice, (2) to identify whether currently used assessment tools satisfy SLTs' requirements, (3) to identify what types of interventions SLTs use, and (4) to identify whether currently used interventions satisfy SLTs' requirements. The analysis will thereby provide an overview of the current assessment and treatment practices of SLTs working with clients with dysarthria as part of a progressive neurological condition in the UK. It will also identify SLTs' views regarding the sufficiency of available tools and establish the values underpinning their management decisions. Within this context, an exploratory analysis of associations between SLTs of different levels of experience and SLTs who work predominantly in hospital or community-based settings was undertaken.

### **Method**

This study employed an online questionnaire survey. Ethical approval was granted by The University College London Research Ethics Committee. National Health Service (NHS) Ethics approval was not required as this was classified as a service evaluation project.

### *Questionnaire*

An online survey for SLTs was designed and piloted specifically for this study. A survey method was chosen because it enabled a large number of practising SLTs to respond in a timely and efficient manner. The questions and options for assessment and intervention originated from Palmer's (2005) work, based on information obtained from three SLT focus groups and interviews. The survey was developed through an advisory group of eight practising SLTs with experience of working with clients with acquired progressive dysarthria in a range of settings (acute, outpatient, community and palliative care). Preparatory versions of the survey were piloted and modified until a final version was agreed upon in liaison with the advisory group.

The survey document comprised three sections concerning management of people with progressive dysarthria. These three sections addressed: information about respondents (employer, region of UK

worked, caseload information, gender, number of years worked with adults with progressive dysarthria, setting(s) worked in), assessment practices (assessments used, aspects of assessment considered to be important, insufficiency of tools), and treatment practices (interventions used, aspects of intervention considered to be important, insufficiency of tools). Information was elicited via closed multiple choice or rating scale questions and free text boxes where responses could not be pre-classified or additional views were sought. Respondents were asked to estimate the percentage of their caseload with which they used a range of formal/informal assessments and interventions over the past 6 months. Free text boxes were used to elicit information about aspects of speech, language, interaction and/or participation that respondents would like to assess or target in intervention for people with progressive dysarthria but do not have the tools to do so.

A full copy of the survey is available online at [http://www.ucl.ac.uk/psychlangsci/research/languagecomm/UK\\_SLT\\_progressive\\_dysarthria\\_questionnaire.pdf](http://www.ucl.ac.uk/psychlangsci/research/languagecomm/UK_SLT_progressive_dysarthria_questionnaire.pdf). For a summary of the research questions, the survey questions used to elicit this information and the available response options, see appendix A.

### *Sample*

The survey was available online between 24 September 2010 and 31 March 2011. Respondents were required to complete the survey in one sitting. Response sheets were anonymous. Only those wishing to enter a prize draw and/or receive a summary report of the survey supplied their contact details. These contact details were received and stored separately from the main survey.

SLTs who had contact with clients with progressive dysarthria within the previous 6 months were recruited via (1) an advert in *The Bulletin*, a professional publication distributed to all members of the RCSLT (approximately 13 000), (2) information provided at relevant training events and special interest groups distributed across England, Wales, Scotland and Northern Ireland, and (3) selected UK university clinical placement contacts. Potential participants were directed to a SurveyMonkey™ website where the survey and associated information were located. A total of 119 SLTs completed the survey.

### *Data storage and analysis*

Participants were deemed to consent for storage of responses by completing and submitting the survey. All answers to the questionnaires were stored directly in a SurveyMonkey™ database. Select subsections of the

questionnaire were then transferred to SPSS 17.0 for subsequent analysis.

Descriptive statistics were used to characterize the numerical data. Frequencies were calculated for the proportion of respondents who used specific assessments and interventions as well as for the proportion of respondents who agreed with presented statements. Associations between variables were explored using chi-square or likelihood ratios (the latter being less susceptible to low expected values). Regarding the 'setting' or 'experience' variables, only significant associations are reported. Free text responses were analysed thematically, where elicited responses were categorized according to the respondent's specific use of words (e.g. 'interaction', 'participation') or descriptions of a term (e.g. 'how they manage in day to day situations' was classified as 'functional'). The frequency of elicited responses, according to the most prevalent issues raised, was thereby generated.

## Results

### Respondents

Respondents came from a wide distribution of locations across the UK. A total of 72.3% ( $n = 86$ ) worked in England, 10.9% ( $n = 13$ ) in Scotland, 10.9% ( $n = 13$ ) in Wales and 5.9% ( $n = 7$ ) in Northern Ireland. A total of 113 (95.0%) respondents were employed, at least partly, by the NHS, of whom 15 (13.3%) were employed at Band 5 (newly qualified SLTs), 26 (23.0%) at Band 6 (specialist SLTs), 39 (34.5%) at Band 7 (highly specialist SLTs), and 33 (29.2%) at Band 8 (principal SLTs/clinical leads). Respondents were predominantly female (96.7%,  $n = 115$ ).

Respondents had worked with adults with progressive dysarthria for a median of 8.0 years (inter quartile range = 4–12 years). The respondents were divided into three groups of 'experience' for the purposes of analysis [up to 5 years [ $\leq 5$ ] ( $n = 42$ ), 6–10 years ( $n = 39$ ), and over 10 years [ $> 10$ ] ( $n = 38$ )]. They were also divided into three groups according to the setting they worked in: predominantly hospital-based (acute general hospital, rehabilitation general hospital and/or outpatient general hospital) ( $n = 52$ , 43.7%), predominantly community-based (community hospital, residential or nursing home, day centre, client's home, hospice and/or specialist tertiary clinic) ( $n = 60$ , 50.4%), or equal time spent across hospital and community-based settings ( $n = 7$ , 5.9%). Data from the third group were not included in the analysis of the 'setting' variable due to the small sample size.

A significant association existed between setting and experience (chi-square = 7.65, d.f. = 2,  $p = 0.02$ ) where proportionately more respondents with up to

5 years of experience were predominantly hospital-based (63.4%) than community-based (36.6%) and proportionately more SLTs with 6 or more years of experience were predominantly community-based (63.4%) than hospital-based (36.6%).

The majority of respondents had between one and five clients with progressive dysarthria on their current caseload. A total of 103 respondents reported having worked with clients with Parkinson's disease in the previous 6 months, 58 with multiple sclerosis, 78 with motor neurone disease, 38 with Huntington's disease and 85 with other clients with progressive dysarthria.

### Assessment

#### What assessments SLTs use

We asked what assessments were routinely used. We supplied names of assessments commonly used in practice and asked respondents to list any others employed. Table 1 outlines an overview of responses.

#### Formal assessments

The majority of respondents used the Frenchay Dysarthria Assessment (Enderby and Palmer 2008). A limited number of SLTs used measures that look beyond the impairment, such as the Functional Communication Profile (Sarno 1969) and Dysarthria Impact Profile (Walshe *et al.* 2009). Other assessments included those based on the Lee Silverman Voice Therapy (LSVT)

**Table 1. Assessments used by respondents**

	<i>n</i>	%
<i>Formal assessments</i>		
Frenchay Dysarthria Assessment (Enderby and Palmer 2008)	90	75.6
Dysarthria Profile (Robertson 1982)	42	35.3
Therapy Outcome Measures (Enderby 1997)	40	33.6
Voice Handicap Index (Jacobson <i>et al.</i> 1997)	40	33.6
Functional Communication Profile (Sarno 1969)	31	26.1
Assessment of Intelligibility of Dysarthric Speech (Yorkston and Beukelman 1981)	23	19.3
Dysarthria Impact Profile (Walshe <i>et al.</i> 2009)	10	8.4
Intelligibility rating scale (Duffy 2005)	8	6.7
Social Networks (Blackstone and Berg 2003)	2	1.7
Other assessments	11	9.2
<i>Informal assessments</i>		
Oromotor examination	114	95.8
Description of breath support and phonation	108	90.8
Observation and/or recording of client's intelligibility in conversation	107	89.9
Observation and/or recording of client's interaction in conversation	101	84.9
Client/significant other ratings of social participation	95	79.8
Other assessments	9	7.6

programme, the Frenchay Screen for AAC (Black *et al.* 2002), the amyotrophic lateral sclerosis rating scale (Hillel *et al.* 1989), the Vocal Profile Analysis (Laver *et al.* 1981), Communicative Effectiveness Index—Modified (Yorkston *et al.* 1999) and various language tests, e.g. Measure of Cognitive–Linguistic Abilities (Ellmo *et al.* 1995) and the Psycholinguistic Assessments of Language Processing and Ability in Aphasia (Kay *et al.* 1992).

### *Informal assessments*

Informal assessments were used more often than any formal assessment. Oromotor examinations were used most commonly. Many respondents reported using informal assessments to assess aspects of communication beyond the impairment. Other assessments included perceptual, severity and communication rating scales, rating scales based on Solution Focused Brief Therapy (De Shazer *et al.* 2006), Talking Mats<sup>®</sup> for views of speech or communication situations, and descriptions of articulatory precision and nasality.

Likelihood ratios were calculated to identify any associations between the use of each formal and informal assessment, according to setting or experience. Proportionally more hospital-based SLTs used the Robertson Dysarthria Profile (Robertson 1982) (likelihood ratio = 6.51, d.f. = 1,  $p = 0.01$ ) and oromotor assessments (likelihood ratio = 6.44, d.f. = 1,  $p = 0.01$ ) than community-based SLTs. A higher proportion of community-based SLTs used the Dysarthria Impact Profile (Walshe *et al.* 2009) (likelihood ratio = 6.79, d.f. = 1,  $p = 0.01$ ). Significant associations were also found between experience and the use of the Voice Handicap Index (Jacobson *et al.* 1997) (likelihood ratio = 5.93, d.f. = 2,  $p = 0.05$ ) and the use of oromotor assessments (likelihood ratio = 6.44, d.f. = 2,  $p = 0.04$ ). SLTs with 6–10 years of experience reported using the Voice Handicap Index and oromotor assessments the least.

### *Aspects of assessment considered to be important*

Respondents were asked whether they considered assessment of oromotor skills, intelligibility, functional communication, interaction and participation in society to be important. These results are reported in table 2.

Proportionately more hospital-based SLTs agreed that oromotor assessment is important (71.2%) than community-based SLTs (51.7%) (likelihood ratio = 4.49, d.f. = 1,  $p = 0.03$ ). Marginally more hospital-based SLTs agreed that assessment of intelligibility is important (98.1%) than community-based SLTs (90.0%) (likelihood ratio = 3.48, d.f. = 1,  $p = 0.06$ ).

**Table 2. Proportion of respondents agreeing that different aspects of communication are important for assessment**

Aspect of communication	<i>n</i>	%
Oromotor skills	71	59.7
Intelligibility	112	94.1
Functional communication	112	94.1
Participation	110	92.4
Interaction	110	92.4

A total of 43 (36.1%) of respondents indicated they were not sure of the value of some of the assessments they used. There were no significant associations between responses to this question and hospital or community-based SLTs or between SLTs with different levels of experience.

### *To what degree current assessments satisfy SLTs' requirements*

A total of 54 (45.4%) respondents indicated there were aspects of speech, communication, interaction and/or participation they would like to assess or describe but do not have the necessary tools to do so. Responses were categorized independently by two raters, with 80.0% agreement that particular respondents' comments should be classified under one of the three most frequently mentioned categories. The frequencies presented here represent the number of respondents in each category where the raters agreed. Table 3 shows the five most frequently mentioned categories of responses. Respondents suggested that a lack of time, funding and resources limited their assessment or description of these aspects.

A greater number of less experienced SLTs mentioned interaction and objective measures than more experienced SLTs. More community-based SLTs suggested interaction and functional communication, whereas more hospital-based SLTs mentioned objective measures.

### *Intervention*

#### *What interventions SLTs use*

The most commonly used intervention across all client groups was providing education to the client

**Table 3. Assessment tools that respondents reported they lack**

Issue raised	<i>n</i>	%
Interaction	14	25.9
Objective/instrumentation (speech measures)	11	20.4
Functional communication	9	16.7
Participation	7	13.0
Psychosocial/impact/relationships	6	11.1

**Table 4. The three most common interventions used with clients with Parkinson's disease, multiple sclerosis, motor neurone disease and Huntington's disease**

	Use in the past 6 months	
	<i>n</i>	%
<i>Parkinson's disease</i>	[103 respondents]	
General rate/volume/prosody work	99	96.1
Functional communication	89	86.4
Speech subsystems work	89	86.4
<i>Multiple sclerosis</i>	[58 respondents]	
General rate/volume/prosody work	45	77.6
Conversation/interaction adaptation	43	74.1
Functional communication	43	74.1
<i>Motor neurone disease</i>	[78 respondents]	
Functional communication	73	93.6
Augmentative and alternative system use	73	93.6
Conversation/interaction adaptation	70	89.7
<i>Huntington's disease</i>	[38 respondents]	
Conversation/interaction adaptation	32	84.2
Functional communication	29	76.3
Skills with carers/significant others	25	65.8

and/or family about the effects of their condition on speech, communication and interaction, followed by a combination of interventions focused on or beyond the impairment. The proportion of respondents who used different interventions was found to vary across client group (see table 4 for the most commonly used interventions). Within each client group a higher proportion of SLTs worked on functional communication than oromotor skills or participation. A higher proportion of SLTs targeted oromotor skills with clients with Parkinson's disease and multiple sclerosis than with clients with motor neurone disease or Huntington's disease.

Likelihood ratios were calculated to identify any associations between frequencies and the most prevalent three interventions used with each client group. More hospital-based SLTs were found to use rate/volume/prosody interventions with clients with Parkinson's disease (100%) than community-based SLTs (93.9%) (likelihood ratio = 4.19, d.f. = 1,  $p = 0.04$ ). Significant positive associations were also found between experience and the use of functional communication with clients with Parkinson's disease (likelihood ratio = 5.88, d.f. = 2,  $p = 0.05$ ), functional communication with clients with multiple sclerosis (likelihood ratio = 9.84, d.f. = 2,  $p < 0.01$ ) and work with carers/significant others with clients with Huntington's disease (likelihood ratio = 7.06, d.f. = 2,  $p = 0.03$ ).

#### *Aspects of intervention considered to be important*

With increasing severity of dysarthria, more respondents agreed that treatment of functional communication

and interaction between the client and their significant other(s) is important and fewer SLTs agreed that treatment of oromotor skills and speech intelligibility is important (figure 1). Across all levels of severity, fewer SLTs considered oromotor work to be important than targeting intelligibility, function, participation or interaction.

Proportionately more hospital-based SLTs agreed it is important to target intelligibility in intervention (96.2%) than community-based SLTs (85.0%) for clients with moderate dysarthria (likelihood ratio = 4.26, d.f. = 1,  $p = 0.04$ ). Proportionately more community-based SLTs agreed it is important to target participation (96.7%) than hospital-based SLTs (86.5%) for clients with moderate dysarthria (likelihood ratio = 4.02, d.f. = 1,  $p < 0.05$ ). A significant association was also found between experience and agreement in the importance of targeting functional communication for clients with severe dysarthria (likelihood ratio = 7.02, d.f. = 2,  $p = 0.03$ ), whereby fewer experienced SLTs considered functional communication work to be important.

#### *To what degree current interventions satisfy SLTs' requirements*

A total of 42 (35.3%) respondents indicated there were aspects of speech, communication, interaction and/or participation they would like to address in intervention but do not have the necessary tools to do so. Responses were categorized independently by two raters, with 100% agreement that respondents' comments should be classified under the most common categories. The top five categories of responses are shown in table 5.

Respondents suggested that the provision of intervention is affected by limitations in time, funding, training and staff as well as limited space, large caseloads, limited information/research and timing of referrals.

Less experienced SLTs mentioned interaction and LSVT more than more experienced SLTs. More community-based SLTs suggested interaction and participation whereas more hospital-based respondents mentioned LSVT.

## **Discussion**

The following discusses the findings regarding the nature, underlying values, views and implications of assessment and treatment practices of SLTs working with clients with progressive dysarthria, and sites them in the wider context of national and professional guidelines.

There is no census to quantify how many UK SLTs work with clients with progressive dysarthria. There is no certainty, therefore, about how representative the current study's sample is. Nevertheless the

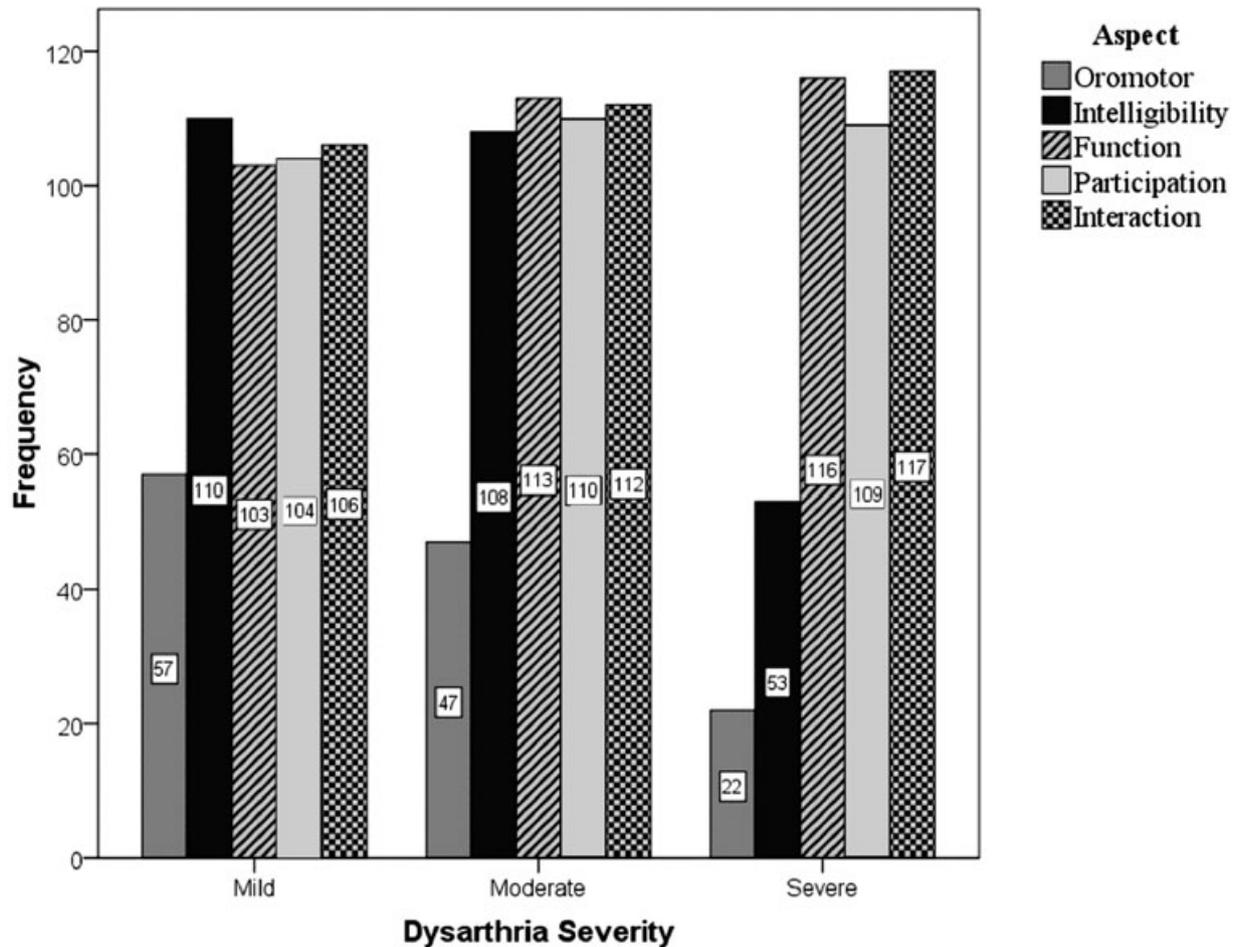


Figure 1. Variation in what aspects of communication SLTs considered to be important in intervention (oromotor skills, intelligibility, functional communication, participation and interaction) across mild, moderate and severe dysarthrias.

**Table 5. Intervention tools that respondents reported they lack**

Issue raised	n	%
Interaction	15	35.7
Lee Silverman Voice Therapy (LSVT)	9	21.4
Participation	7	16.7
Augmentative and Alternative Communication (AAC)	7	16.7
Instrumentation/technology/equipment	6	14.3

respondents represented a range of experience, settings worked and regions across the UK. Although there are estimates of how many individuals have particular progressive disorders, only a portion of these will experience dysarthria, of which only a percentage will receive SLT.

*How assessments that SLTs use correspond with the ICF dimensions*

The most commonly used assessments are impairment-based, although more SLTs agreed that it is important

to assess aspects of communication beyond the impairment. The results from this study confirm the findings by Miller *et al.* (2011) that SLTs use predominantly impairment-based assessments, with a high proportion of SLTs using oromotor assessment, despite poor correspondence to speech performance and limited evidence for its use (Weismer 2000, Clark 2003).

Recent research has begun to investigate the effect of dysarthria on communicative participation and its psychosocial impact (Walshe 2011, Yorkston and Baylor 2011). This has led to the development and emergence of new tools such as the Dysarthria Impact Profile (Walshe *et al.* 2009) and the Dysarthria in Interaction Profile (Bloch 2012). Whilst only 8.4% of the respondents in this survey reported the use of Walshe *et al.*'s profile it is encouraging to see its emergence alongside more established resources.

The results show that despite the fact that 95% of respondents use oromotor assessments, only 59% of SLTs agree that oromotor assessment is important, whereas over 90% of SLTs agree that assessing aspects

beyond the impairment is important. This highlights a discrepancy between the assessments SLTs use and the aspects of assessment considered to be important. The finding that a relatively high proportion of respondents agreed that functional communication is important to assess compared with oromotor assessment is notable given the lack of resources and research available to support functional communication in comparison with impairment level resources.

*How interventions that SLTs use correspond with the ICF dimensions*

The most commonly used interventions encompass impairment-based and more functional interventions. This survey has identified that the use of specific interventions varies according to the progressive condition. SLTs commonly use impairment-based interventions with clients with Parkinson's disease and multiple sclerosis and target beyond the impairment with clients with motor neurone disease and Huntington's disease. The results support Palmer's (2005) findings regarding SLT treatment for clients with Parkinson's disease and motor neurone disease. SLTs may approach different neurological diagnoses differently due to the different rates of progression, age of onset, patterns of underlying neuropathology and symptoms, prognosis and/or concomitant diagnoses (e.g. Yorkston 2007). The relatively high percentage of respondents that use impairment-based interventions in their Parkinson's disease caseload may be partly explained by the evidence-base surrounding LSVT (Ramig *et al.* 2001, Sapir *et al.* 2008), a predominantly impairment-based intervention.

Across all client groups, more SLTs reported using functional interventions than targeting oromotor skills; on average in this survey, 84% of respondents used functional communication interventions and 48% targeted oromotor work in their clinical practice. The 48% that targeted oromotor work is high considering that there is limited empirical evidence regarding its efficacy; the use of oromotor methods remains controversial in their translation into functional speech improvements (Hodge 2002, Clark 2003). In reporting that oromotor work has been a frequent component of dysarthria treatment, Mackenzie *et al.* (2010) suggest that SLTs may use oromotor exercises as they do not require time demanding preparation and tend to be well received.

The aspects of intervention that SLTs value was found to vary according to dysarthria severity. With increasing severity, fewer respondents agreed that targeting oromotor skills and intelligibility are important and more agreed that targeting function

and interaction are important. A high proportion of SLTs considered participation to be important with all levels of dysarthria severity. This increasing focus beyond the impairment corresponds to the typical sequencing of intervention described by Yorkston *et al.* (2004). Sequencing or staging of intervention is essential in order to address current difficulties and anticipate future ones (Yorkston 2007, RCSLT 2009, Yorkston *et al.* 2004). Across all levels of severity, more SLTs agreed that treating communication beyond the level of physical impairment is more important than just treating oromotor skills. These results corroborate Miller *et al.*'s (2011) findings that SLTs who work with clients with progressive dysarthria (in their study, Parkinson's disease) believe that therapy should focus on activity and participation issues. This is also reflected in the development of new tools measuring communicative participation (Yorkston and Baylor 2011) and social interaction (Bloch 2012).

*Do current assessments and intervention tools satisfy SLTs' requirements?*

Many respondents indicated a lack of tools to assess and intervene beyond the level of impairment. Also, surprisingly 36.1% of respondents indicated that they are unsure of the value of some of the assessments they use; this may be accounted for, at least in part, by a scarcity of assessments which match their clinical needs. A lack of time was also suggested to affect SLTs clinical management of clients with progressive dysarthria. Further investigations would be required to establish the factors underlying perceived time pressures but they may well include: high workloads, large caseloads, competing role demands (e.g. prioritization of dysphagia) as well as more fundamental institutional cultures regarding the allocation of therapy resources within specific settings and with different client groups.

*Comparison of assessment and treatment practices*

More respondents (1) used oromotor assessments than used oromotor interventions and (2) valued the use of assessing oromotor skills than targeting these in intervention. This trend may be explained by the fact that assessments are used for multiple purposes including confirmation of neurological diagnoses, differential diagnosis of other neurological conditions (e.g. dyspraxia) and establishing the rate of progression, as well as informing therapy. In addition, the high co-occurrence of dysphagia with dysarthria in individuals with progressive disorders (Yorkston *et al.* 2004) may have contributed to the high proportion of respondents using oromotor assessments; indeed they

may have found it difficult to tease out a rationale behind assessment whilst addressing dysarthria and dysphagia simultaneously. On the contrary, a similar number of respondents (1) used assessments and interventions to target aspects beyond the impairment and (2) considered these aspects to be important to target in assessment and intervention. More SLTs considered it important to target these aspects than actually use such tools, seemingly due, at least in part, to a lack of tools for working beyond the impairment.

Overall, respondents reported a lack of assessment and treatment tools particularly in relation to interaction, a theme currently receiving increased attention in the field of progressive dysarthria (Bloch and Wilkinson 2011a, 2011b, Bloch 2012, Griffiths *et al.* 2011).

### *Setting*

The results support a trend that more SLTs working in hospital settings use impairment-based assessments than community-based SLTs, which may stem from an expectation to use these assessments by the medical team. Indeed, the purpose of assessment varies across factors such as setting worked in (Yorkston *et al.* 1999). More hospital-based SLTs also considered assessment of oromotor skills and intelligibility to be important than community-based SLTs. Hospital-based SLTs appear to adhere to the medical model in which they work, with respect to their values as well as the management practices they use. In contrast, more community-based SLTs indicated they have insufficient tools to assess interaction and tools to target interaction in treatment. This may be due, in part, to the fact that community-based therapists have the opportunity to adopt a more social approach to disability. A similar trend was apparent from the intervention findings.

It is possible that there are different cultures of assessment and/or intervention, reflecting personal, management or system values for SLTs working in different settings. For example community SLT roles may demand a more pragmatic approach and hospital-based roles a more technical one. In addition, the focus of management may vary across setting in part due to the point along a care pathway where a client may be seen. Initial assessments may utilize more widely available and established impairment-based tools.

### *Experience*

A greater proportion of less experienced SLTs used predominantly impairment-based assessments, whilst more experienced SLTs looked beyond the impairment in assessment. It may be that less experienced SLTs, who have spent fewer years working with people with progressive dysarthria, and therefore have less clinical

experience in areas for which there are a lack of tools available, rely more heavily on the most widely used procedural assessment and procedural informal assessments. In addition a higher number of less experienced SLTs mentioned lacking tools for interaction for assessment and intervention.

With reference to treatment, more experienced SLTs targeted beyond the impairment. However, contrary to this trend, more experienced SLTs used impairment-based interventions with clients with Parkinson's disease, as supported by the evidence-base surrounding LSVT (Ramig *et al.* 2001, Sapir *et al.* 2008).

The results concerning setting and experience must be interpreted with caution, due to the exploratory nature of these analyses and since there is an association between these two variables. It is possible that the associations found were influenced by interaction effects, since a high proportion of less experienced SLTs in the sample worked in hospital settings whereas a higher proportion of SLTs based in the community were more experienced. Also, the majority of respondents in this sample worked across a range of hospital and community-based settings. It would be interesting to further investigate the factors contributing to the trends concerning setting and experience through interviews.

### *Matching up to guidelines*

Guidelines for best practice recommend that SLTs consider the impact of the dysarthria on client communication. For example, the RCSLT (2005) clinical guidelines recommend that assessment of dysarthria includes a perceptual assessment, instrumental evaluation, a communication skills profile, assessment of the client and family's perception of dysarthria, assessment of the psychosocial impact of dysarthria and evaluation of the skills of the client's conversational partner(s) in communicative interaction. In addition, according to Communicating Quality 3 (RCSLT 2006) impairment level interventions in motor speech disorders (e.g. targeting range, force, sustainability of movements) are subordinate to effecting change in activity limitation and participation restriction.

In line with these recommendations, this paper provides evidence that SLTs value the importance of targeting different components of communication in assessment and intervention, including aspects of functional communication, interaction and participation. However, the survey findings also reveal that there are inadequate tools for SLTs to use for managing clients with progressive dysarthria in a holistic manner.

There is a need to widen the dissemination of recently developed formal assessment tools and to develop tools to enable SLTs to consider the client holistically and to meet values of targeting aspects beyond the impairment and guidance for best practice.

### *Limitations*

Whilst respondents represented a range of experience of working with clients with progressive dysarthria, settings worked in and regions across the country, a larger sample may have been more representative of the SLT population and would have given more statistical power to the findings. It is possible that more SLTs would have responded to and completed a shorter survey. The survey had to be completed in one sitting due to the nature of the online survey programme. This may have reduced the response rate.

A survey methodology is limited in that it comprises specific questions or statements. In this survey, the researchers were unable to find out why SLTs responded as they did. However the researchers suggested possible accounts for the trends as identified by the advisory group members. Also, the questions used to elicit some information in the survey were optional and the categorization of free text responses was crudely analysed qualitatively, with limited availability to follow up with SLTs due to the ethical restrictions.

The application of ICF terminology, as used throughout this study, remains challenging, particularly in relation to the concepts of activity and participation (O'Halloran and Larkins 2008, Threats 2008). Attempts are currently being made to make the ICF more specific (American Psychological Association, World Health Organisation 2012). There has also been a lack of clarity as to whether intelligibility should be considered at the level of impairment or the level of activity (Hartelius and Miller 2011). In addition, the ICF concepts do not neatly encapsulate most assessments and interventions; rather there is overlap across different levels of functioning. For example LSVT is predominantly an impairment-based intervention yet it addresses components of activity.

There have been numerous attempts to define the term 'functional' in the literature (Elman and Bernstein-Ellis 1995, Frattali 1998, Worrall 2000). In the survey, the term 'functional' was presented alongside exemplary phrases to ensure that all respondents had a similar understanding of the term. Many SLTs used the term 'functional' in their free text responses; it would be interesting to identify what SLTs mean by this and to specifically identify the 'functional tools' that SLTs feel they lack.

### *Further research*

The results from this survey highlight the clinical need for new assessments and evidence to support clinical practice, therefore these results can support the development of clinical services and future research initiatives.

The results presented here support a need for the development of measures to address aspects of communication beyond the impairment, particularly relating to interaction. Dysarthria in Interaction tool development is underway (Bloch 2012), but will require further research into how the content and format of such tools will be of greatest benefit to clinicians and service users.

The results demonstrate a need for further research into the effectiveness of oromotor intervention and validity of oromotor assessment for clients with dysarthria. There is also a need for research into the effectiveness of specific intervention approaches to guide clinical decision-making for clients with different dysarthria types and/or different neurological conditions and the staging of techniques into an effective management sequence (Yorkston 2007). Such information is needed to inform unresolved service delivery options, such as those outlined by Miller *et al.* (2011), including what the nature of intervention should be and how involvement might vary over the time course of an illness. Evidence for the clinical effectiveness and efficiency of SLT is particularly important in the current economic climate, to ensure SLTs achieve improvements in order to secure appropriately commissioned services.

It would be interesting to investigate whether there are differences regarding assessment of individuals with different levels of dysarthria severity, information not elicited in this survey. Investigation into this relationship may be useful as a basis for informing the appropriateness of particular assessments and associated outcome measures with these clients.

### **Conclusion**

This paper has presented results that represent the working practices and views of UK SLTs working with people with progressive dysarthria. It has shown that the majority of respondents place a high level of importance on assessment and treatment beyond the level of impairment. This reinforces the findings from other recent research, including Hartelius and Miller (2011) and Walshe and Miller (2011).

The results highlight the need to make tools targeting the impact of dysarthria more available to SLTs and to develop new tools that SLTs will adopt in their practice. Surprisingly, almost half of

respondents indicated there were aspects of speech, communication, interaction and/or participation they would like to assess or describe but do not have the necessary tools to do so. Tools are required to identify, describe, measure and target the variable effects of progressive dysarthria on communication and interaction. This is important for two reasons. Firstly, in the current economic climate SLTs need appropriate outcome measures to prove the efficacy and benefit of their services to commissioners. Secondly, it is likely that the prevalence of neurologic disease and its consequences will increase with the aging population (Duffy 2007). It was also surprising to find that over one-third of respondents indicated they were not sure of the value of some of the assessments they used. This finding suggests that SLTs need to reflect more on their rationale for assessment.

The results provide evidence that various factors contribute to an SLT's choice of tools and values when working with clients with progressive dysarthria. These include guidelines for best practice, the number of years they have worked with this client population, whether they are hospital or community-based, the progressive condition and dysarthria severity.

In conclusion, bearing the limitations in mind this study contributes new knowledge to the understanding of clinical practice. It shows the range of assessment and intervention approaches used with people with progressive dysarthria and highlights the importance placed on interaction and other functional aspects of communication, alongside impairment-based approaches.

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## Appendix A

Table A1. Summary of information elicited in the survey

Research question	Elements investigated in the current survey; <i>questions asked on the survey to elicit this information</i> ; possible responses to these questions.
Do the assessments that SLTs use correspond with the ICF dimensions, as recommended in clinical guidelines?	<p>What (formal/informal) assessments SLTs use  <i>'Estimate the percentage of your progressive dysarthria caseload with which you have used each of the following (published assessments/tools or descriptive assessments and informal tools) over the past 6 months'</i>; 0%, 1–10%, 11–20%, 21–30%, 31–40%, 41–50%, 51–60%, 61–70%, 71–80%, 81–90%, 91–100%</p> <p>What aspects of assessment SLTs consider to be important  <i>'To what degree do you agree/disagree with the following statements' (e.g. I think observation/assessment of interaction between the client and significant other(s) is important)</i>; a) strongly agree, b) agree, c) neither agree or disagree, d) disagree, e) strongly disagree</p>
Do current assessments satisfy SLTs' requirements?	<p>What assessment tools SLTs lack  <i>'Are there any aspects of speech, communication, interaction, and/or participation that you would like to assess or describe in your work with people with progressive dysarthria but do not have the necessary tools to do so?'</i>; a) yes, b) no. <i>'If yes please list the areas you would like to assess or describe'</i>; free text box</p>
Do the types of interventions that SLTs use correspond with the ICF dimensions, as recommended in clinical guidelines?	<p>What interventions are used with different clinical populations  <i>'In what proportion of your (Parkinson's disease, multiple sclerosis, Huntington's disease, motor neurone disease) caseload have you used the following interventions? This need only be an approximate estimate and should be based on your work over the past 6 months'</i>; 0%, 1–10%, 11–20%, 21–30%, 31–40%, 41–50%, 51–60%, 61–70%, 71–80%, 81–90%, 91–100%</p> <p>What aspects of intervention SLTs consider to be important across dysarthria severity with reference to SLT intervention for people with (mild/moderate/severe) progressive dysarthria to what degree do you agree/disagree with the following statements (e.g. I think treatment of oromotor skills is important); a) strongly agree, b) agree, c) neither agree or disagree, d) disagree, e) strongly disagree</p>
Do current interventions satisfy SLTs' requirements?	<p>What intervention tools SLTs lack  <i>'Are there any aspects of speech, communication, interaction, and/or participation that you would like to address in intervention but do not have the necessary tools to do so?'</i>; a) yes, b) no. <i>'If yes please list the areas you would like to address in your intervention'</i>; free text box</p>

Note: To access a copy of the full version of the survey, see [http://www.ucl.ac.uk/psychlangsci/research/languagecomm/UK\\_SLT\\_progressive\\_dysarthria\\_questionnaire.pdf](http://www.ucl.ac.uk/psychlangsci/research/languagecomm/UK_SLT_progressive_dysarthria_questionnaire.pdf).