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**A narrative review of communication accessibility for people with aphasia
and implications for multi-disciplinary goal setting after stroke**

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-A narrative review of communication accessibility for people with aphasia and implications for multi-disciplinary goal setting after stroke

Background: Guidelines to support accessible goal setting with stroke survivors with aphasia are lacking.

Aims: To (i) determine the communication barriers and facilitators relevant to accessible goal setting for stroke survivors with aphasia and (ii) propose recommendations for accessible goal setting practice.

Design: Narrative literature review incorporating a systematic search strategy.

Methods & procedures: An electronic database search of abstracts was conducted from January 2003 to March 2018 in CINAHL, MEDLINE, AMED, ProQuest Central, and PsychINFO. We sought peer-reviewed articles including stroke survivors with aphasia, carers, or healthcare professionals that addressed (i) communication partner skills and behaviours and/or (ii) the physical environment. Study quality was appraised using the Mixed Methods Appraisal Tool (MMAT). Thematic analysis was conducted on key findings.

Outcomes & results: 647 articles were identified. 70 full-text articles were screened for eligibility; 34 of which were included. We propose a model and recommendations to support accessible goal setting, including supportive conversation strategies and a modified physical environment.

Conclusions: Specific evidence for accessible goal setting with stroke survivors with aphasia is lacking. Staff training and ongoing support is required for successful use of communication strategies and resources. Further research is needed to develop and evaluate accessible goal setting resources and training.

Keywords: aphasia; goal setting; accessibility; rehabilitation; stroke

Introduction

Goal setting is a key component of stroke rehabilitation and involves collaboratively negotiating, pursuing, and monitoring goals for recovery (Levack et al., 2015). Goal setting is recommended in stroke rehabilitation guidelines in the UK and internationally, including the Royal College of Physicians' National Clinical Guideline for Stroke (RCP, 2016), the Australian Aphasia Rehabilitation Best Practice Statements (CCRE, 2014), the Australian

Clinical Guidelines for Stroke Management (Stroke Foundation, 2017), and the Canadian Stroke Best Practice Recommendations (Heart and Stroke Foundation, 2018).

Levack et al. (2015) define goal setting as having two phases: goal setting and goal pursuit. Goal setting involves negotiating and setting the goals, while goal pursuit involves the activities undertaken to achieve the goals, including developing a plan, determining strategies or steps to attain the goals, and obtaining feedback (Levack et al., 2015). Explaining to stroke survivors what the goal setting process is and how they can get involved is an important preparatory activity (Scobbie et al., 2011, 2013). Goal setting in practice involves ongoing conversation (Coulter et al., 2015) between stroke survivors and rehabilitation staff to determine priorities, goals, and plans (Scobbie et al., 2013). People with aphasia have expressed a desire for greater information about stroke, aphasia, and their care pathway to empower them to engage in decision making about their rehabilitation (Worrall et al., 2011). However, many stroke survivors are not provided with written or verbal information on the goal setting process, which can be a barrier to participation (Holliday et al., 2007; Rosewilliam et al., 2011). Staff may also perceive patients with stroke and other neurological conditions as ‘passive’ or unwilling to participate in goal setting (Van De Weyer et al., 2010).

Supporting stroke survivors to voice what is important to them is essential to person-centred goal setting practice (Coulter et al., 2015; Scobbie et al., 2011). Speech-language therapists have emphasised the importance of this person-centredness when working with people with aphasia (Hersh et al., 2012). However, aphasia can bring additional challenges to goal setting given the communication demands of the process (Rohde et al., 2012). Further, according to previous systematic reviews addressing goal setting in rehabilitation for people with stroke and other acquired brain injuries, staff frequently cite patients’ communication or

cognitive impairments as barriers (Plant et al., 2016; Prescott et al., 2015; Rohde et al., 2012; Rosewilliam et al., 2011; Sugavanam et al., 2013).

Accessibility is key for stroke survivors with aphasia and must be integral to the goal setting process. Accessibility is defined as “the provision of flexibility to accommodate each user’s needs and preferences” (Worrall, Rose, Howe, McKenna, & Hickson, 2007). As part of the communication environment in goal setting interactions, communication partners may need to modify their communication to improve accessibility for stroke survivors with aphasia. For the purpose of this review, the communication environment consists of *the communication partner*, including their skills and behaviours, and the *physical environment*.

Communication partners, such as health professionals, family members, and friends, enact skills and behaviours that impact on communication accessibility. For example, interrupting or speaking quickly may reduce communication accessibility (Simmons-Mackie, 2018). Such behaviours can be overcome by learning skills like slowing down or asking closed questions (Barnes & Ferguson, 2015; Blom Johansson et al., 2013). Given that relationships feature prominently in the recovery goals reported by stroke survivors with aphasia, communication partners can have an important role in both facilitating access to goal setting and supporting life after stroke (Worrall et al., 2011).

The physical environment can also support or hinder the conversation. For the purpose of this review, we propose that the physical environment includes *written information, pictures and images, communication support tools, and place and structure*. Written information includes text formatting (i.e. font size, paragraphing, etc.) (Worrall et al., 2005). While stroke survivors with aphasia value receiving written stroke and aphasia information, the text should be formatted in an accessible way (Rose et al., 2010). Pictures and images, such as graphics, photographs, or line drawings, can also be used to support a conversation or written information (Simmons-Mackie, 2018). For example, people with

aphasia have reported graphics as helpful in patient educational materials (Rose et al., 2011b). People with aphasia can benefit from communication tools that support their understanding and expression (Simmons-Mackie, 2018). This includes augmented and alternative communication (AAC) tools, such as symbols or picture cards. Place and structure includes the environment in which the conversation takes place, which consists of how the space is organised, noise levels, background activity, and task structures or schedules (Worrall et al., 2005).

SMARTER goal setting is a way of conceptualising the goal setting process so that it is Shared, Monitored, Accessible, Relevant, Transparent, Evolving, and Relationship-centred (Hersh et al., 2012). SMARTER, as a set of principles, aims to make collaborative goal setting easy to implement and understand for therapists and people with aphasia (Hersh et al., 2012). However, while speech-language therapists may be equipped to address the 'Accessible' component through their training as communication specialists, other members of a multi-disciplinary rehabilitation team may lack experience or confidence in making accessible adjustments (Simmons-Mackie et al., 2007).

Guidelines for multi-disciplinary rehabilitation teams on how to make goal setting conversations and the physical environment accessible for stroke survivors with aphasia are currently unavailable. Rehabilitation staff may therefore lack access to the evidence or resources to implement accessible goal setting. Consequently, stroke survivors with aphasia may not receive optimal access to goal setting in their rehabilitation. There is existing research on the preferences and goals of people with aphasia and how to approach person-centred aphasia therapy in rehabilitation (e.g. SMARTER framework). However, 36% of community rehabilitation services in the UK operate without an SLT on staff (Scobbie et al., 2015). Therefore, the translation and uptake of this work into other disciplines that also work with people with aphasia require attention to ensure that accessible goal setting is not limited

to only speech-language therapy settings. Our review aimed to address the lack of synthesised evidence and guidelines for improving the accessibility of multi-disciplinary goal setting by informing how stroke survivors with aphasia can be optimally supported to participate in the goal setting process through accessible communication practices.

Aims

We aimed to conduct a review of the literature in order to:

(i) determine the communication barriers and facilitators relevant to the goal setting process for stroke survivors with aphasia, including:

- a) The skills and behaviours of carers and staff as communication partners and
- b) The characteristics of the physical environment.

(ii) propose recommendations for accessible goal setting practice in the context of rehabilitation.

Methods

Narrative and systematic review approaches were considered. These approaches aim to provide an overview of evidence on a topic (Arksey & O'Malley, 2005; Ferrari, 2015; Snyder & Engström, 2016). Systematic reviews emphasise evidence quality and can provide a synthesis of evidence on a narrowly defined topic, often the effectiveness of an intervention (Dixon-Woods et al., 2005; Greenhalgh et al., 2018).

Narrative reviews provide a summary of literature and may not use quality appraisal or specific criteria for inclusion (Ferrari, 2015; Greenhalgh et al., 2018). A narrative review may be more appropriate than a systematic review when the topic is broad and includes interrelated but separately researched issues (Greenhalgh et al., 2018). The methodological rigour of narrative reviews can be enhanced by using a systematic search strategy and

reporting the methodology in full (Ferrari, 2015; Grant & Booth, 2009). Quality appraisal can also add credibility to the evidence gathered (Mays et al., 2005).

Thematic analysis can be used in a narrative review to provide a descriptive synthesis of qualitative and quantitative data where the objective of the review is to identify common themes on a multi-faceted topic (Braun & Clarke, 2006; Mays et al., 2005). We chose to conduct a narrative review, using a comprehensive systematic search strategy (Ferrari, 2015; Grant & Booth, 2009), given the wide range of topics likely to be covered within the area of accessible goal setting for stroke survivors with aphasia. Thematic analysis was used (Braun & Clarke, 2006) to inform recommendations for accessible goal setting.

Search strategy

We conducted an electronic database search of abstracts in Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, Allied and Complementary Medicine Database (AMED), ProQuest Central, and PsychINFO. These databases were selected due to their extensive coverage of medical and health science journals. Reference lists of included studies were also searched. Abstract searching was deemed the most suitable approach, as pilot searching of titles provided limited results.

Keywords were chosen to capture articles with information relevant to accessible goal setting for adult stroke survivors with aphasia and carers and healthcare staff who support them. Accessible goal setting for stroke survivors with aphasia is a broad topic involving different sub-topics that may be studied independently, such as accessible information and carer support. Articles may also address accessibility-related issues without using accessibility terminology, for example, by discussing communication support, which impacts on accessibility. The search terms were applied as keywords rather than MeSH terms due to the range of specific terms used. The keywords and search string used are provided in Appendix A.

Inclusion criteria

Studies were included if they (i) involved adults with aphasia after stroke and/or carers and/or rehabilitation staff supporting adults with aphasia after stroke and (ii) addressed either of the following aspects of communication accessibility relevant to goal setting:

- (1) The communication partner's skills and behaviours that impact on communication;
- (2) Characteristics of the physical environment that impact on accessibility, including
 - a. written information
 - b. pictures or images
 - c. communication support tools
 - d. place and structure.

Articles did not need to explicitly address goal setting but needed to address at least one of the above aspects of communication accessibility. Peer-reviewed journal articles that met the above criteria and were published between January 2003 and February 2018, in English, and with full text available were considered for inclusion. Qualitative, quantitative, and mixed-methods studies were eligible for inclusion, in addition to literature reviews, and multiple case reports or vignettes. A starting year of 2003 was selected as this reflects a shift in research and practice towards conceptualising aphasia accessibility (Howe, Worall, & Hickson, 2004). Titles of retrieved articles were screened for relevance, followed by abstracts and then full texts [EB]. A second reviewer [LS] screened full texts from 10% of the included abstracts to ensure consistency and improve rigour.

Exclusion criteria

Studies were excluded if they did not (i) address communication accessibility, (ii) state whether participants had aphasia, (iii) differentiate findings for participants with aphasia, (iv) specify aphasia after stroke (as different types of aphasia can have different aetiologies and treatment pathways not covered by stroke rehabilitation). Letters, conference proceedings, or

single cases were also excluded. The inclusion/exclusion screening questions used are provided in Appendix B.

Quality appraisal

The Mixed Methods Critical Appraisal Tool (MMAT) (Pluye et al., 2018) was used to appraise the quality of qualitative, quantitative, and mixed-methods studies included in the review. The MMAT includes four quality criteria: clarity of research questions and objectives, sampling, appropriateness of methods, and validity of measurements or tools. A study can be given a score of 0%, 25%, 50%, 75%, or 100%. A score of <50% is considered low quality, 75% moderate quality, and 75-100% high quality. The first author [EB] independently appraised all included studies using the MMAT tool. A second reviewer [LS] independently appraised 10% of included studies for comparison.

Data extraction

EB extracted data from all included studies into a data extraction table under the following headings: population/participant group, methods, communication partner's skills and behaviours, and characteristics of the physical environment, including a) written information, b) pictures or images, c) communication support tools, and d) place and structure (see data extraction template in Appendix C). A second reviewer [LS] independently extracted data from 10% of the included studies for comparison. Following extraction, findings were paraphrased, simplified, and categorised as barriers or facilitators [EB].

Data synthesis

We used a two-stage thematic analysis process (Braun & Clarke, 2006) to summarise the main themes derived from the extracted findings. In the first stage of analysis, a deductive approach was used. Findings were grouped by the first author [EB] as barriers or facilitators

in relation to the pre-existing categories of (i) communication partner skills and behaviours and (ii) physical environment. Preliminary themes, sub-themes, and codes were identified after repeated reading of the data [EB], then reviewed and discussed [EB, LS], resulting in similar themes and sub-themes being merged. To be considered as recommendations, findings needed to be reported by a study rated as moderate or high quality (75-100%) with the MMAT.

In the second phase of analysis, relationships were examined between the barrier and facilitator themes and sub-themes [EB]. This informed development of a proposed model for accessible goal setting. The model was discussed and refined with three other reviewers [LS, MB, LW] with reference to barrier and facilitator themes and subthemes.

Results

As illustrated in Figure 1, 647 articles were assessed for eligibility after excluding 145 duplicates. A total of 70 full-text articles were assessed against the inclusion criteria, including 55 articles identified from the database search and a further 15 articles identified through other sources. A total of 36 articles were excluded. Thus, 34 articles were included in the analysis. In two instances, two separate articles reported different data sets from the same study (Croteau et al., 2004; Croteau & Le Dorze, 2006; Rose et al., 2011a, 2012), resulting in a total of 32 studies included in our review. A list of included studies and MMAT quality scores is provided in Appendix D.

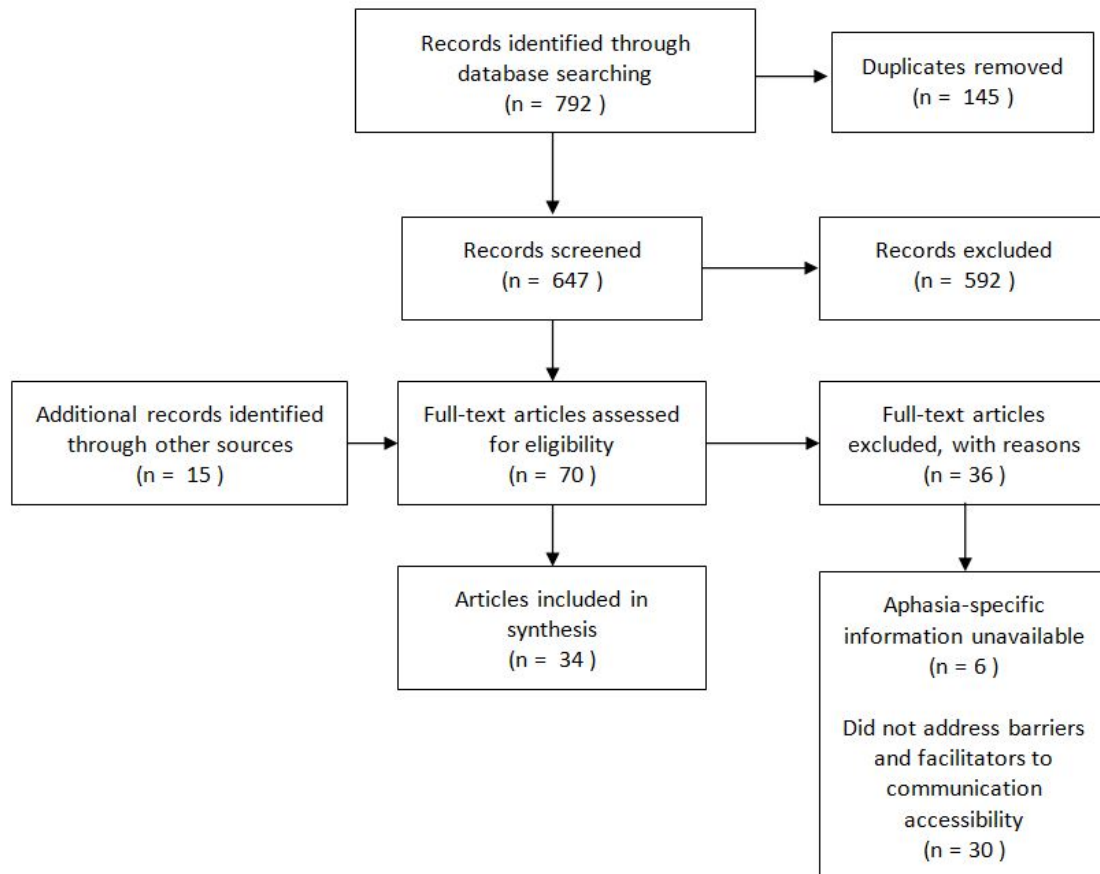


Figure 1. PRISMA diagram

Study design

The majority of studies (n=17) used qualitative methods, including interviews, case studies, observations, and literature reviews. Four studies used quantitative methods, including surveys and pre-/post-training assessments. Eight studies used mixed methods designs, largely involving combinations of interviews and surveys or other assessment data. Two studies about the Talking Mats™ communication tool (Bornman & Murphy, 2006; Murphy & Boa, 2012) presented case vignettes, and one study was an opinion piece (Simmons-Mackie, 2018).

Study quality

Overall, the quality of included studies was high (see Appendix E). No studies were excluded from analysis based on quality. Three studies could not be classified or appraised (Bornman & Murphy, 2006; Murphy & Boa, 2012; Simmons-Mackie, 2018) as case vignettes and opinion pieces are not included in the MMAT appraisal tool. Four included studies (15%) were independently appraised by a second reviewer [LS] to ensure consistency for compiling recommendations. Agreement for quality scores was reached for all four jointly appraised articles.

Of the 30 studies appraised, 14 scored 100% (high quality and methodological rigour). Twelve studies scored 75%, indicating moderate quality. Three studies (Dalemans, De Witte, Wade, & Van den Heuvel, 2008; Purdy & Hindenlang, 2005; Blom Johansson et al., 2013) scored 50%, indicating low quality. Of these, one study (Purdy & Hindenlang, 2005) did not provide the sampling strategy and lacked sufficient information about the caregiver and stroke survivor communication assessments and questionnaires used. The second study (Dalemans et al., 2008) used mixed methods, but the aims and methods of the quantitative study contained insufficient detail, so only data from the qualitative study was extracted. The third study (Blom Johansson et al., 2013) used mixed methods, but the qualitative component provided insufficient information about the context of data collection and researcher reflexivity.

Communication barriers and facilitators relevant to accessible goal setting

Studies addressed a range of accessibility issues within the two domains of communication partner skills and behaviours and the characteristics of the physical environment. Ten studies addressed communication partner skills and behaviours only, 12 studies addressed physical environment only, and ten studies addressed both. Of the studies on the physical environment, 13 addressed written information, eight addressed pictures and images, five addressed communication support tools, and nine addressed place and structure. Table 1 presents communication partner and physical environment themes with related barrier and facilitator sub-themes and codes.

Table 1. Themes, sub-themes, and codes for communication partner and physical environment barriers and facilitators

Communication partner themes	Barrier sub-themes	Facilitator sub-themes
(1) Implementation of accessibility strategies	Service-level barriers <ul style="list-style-type: none"> – <i>Lack of training and awareness</i> (Hilton, Leenhouts, Webster, & Morris, 2014; Howe, Worrall, & Hickson, 2008a; Jensen et al., 2015; Simmons-Mackie et al., 2007) – <i>Lack of staff continuity</i> (Simmons-Mackie & Kagan, 2007) 	Service-level support <ul style="list-style-type: none"> + <i>Centralised support team</i> (Simmons-Mackie & Kagan, 2007) + <i>Ongoing training and support</i> (Horton, Lane, & Shiggins, 2016; Jensen et al., 2015; Simmons-Mackie et al., 2007)
(2) Time	Lack of time <ul style="list-style-type: none"> – <i>Not enough time given to the conversation</i> (Hersh, Godecke, Armstrong, Ciccone, & Bernhardt, 2016; Horton et al., 2016; Jensen et al., 2015) – <i>Fast pacing of the conversation</i> (Ashton et al., 2008; Croteau, Vychytil, Larfeuille, & Le Dorze, 2004; O’Halloran, Worrall, & Hickson, 2011; Purdy & Hindenlang, 2005) 	Enough time <ul style="list-style-type: none"> + <i>More time given to the conversation</i> (Blom Johansson, Carlsson, Östberg, & Sonnander, 2012; Blonski et al., 2014; Dalemans et al., 2008; Grohn, Worrall, Simmons-Mackie, & Brown, 2012; Howe et al., 2008a; Howe, Worrall, & Hickson, 2008b; Jensen et al., 2015; Blom Johansson, Carlsson, & Sonnander, 2012; Luck & Rose, 2007) + <i>Slow pacing of the conversation</i> (Blom Johansson et al., 2012; Grohn et al., 2012; Howe et al., 2008a; Purdy & Hindenlang, 2005)
(3) Participation of the person with aphasia	Excluding the person with aphasia <ul style="list-style-type: none"> – <i>Controlling the conversation</i> (Croteau et al., 2004; Hersh et al., 2016; Jensen et al., 2015; Blom Johansson et al., 2012.; Purdy & Hindenlang, 2005; Simmons-Mackie et al., 2007) – <i>“Speaking for” the person with aphasia</i> (Croteau & Le Dorze, 2006; Croteau et al., 2004; Dalemans et al., 2008; Hersh et al., 2016; Howe et al., 2008a; Jensen et al., 2015) 	Including the person with aphasia <ul style="list-style-type: none"> + <i>Giving opportunities to communicate</i> (Grohn et al., 2012; Hersh et al., 2016; O’Halloran et al., 2011) + <i>Managing “speaking for” behaviours</i> (Hersh et al., 2016)
(4) Conversation partner’s approach to strategies	Negative approach to strategies from staff/carers <ul style="list-style-type: none"> – <i>Negative attitude/impatience</i> (Howe et al., 2008a; Jensen et al., 2015; Simmons-Mackie et al., 2007) – <i>Avoiding strategies</i> (Hilton et al., 2014; Blom Johansson et al., 	Positive approach to strategies from staff/carers <ul style="list-style-type: none"> + <i>Positive staff/carer attitude when using strategies</i> (Horton et al., 2016; Howe et al., 2008a, 2008b; Blom Johansson et al., 2012; Purdy & Hindenlang, 2005)

	2012; Simmons-Mackie et al., 2007)	+ Staff/carer readiness and willingness to learn strategies (Blom Johansson et al., 2013)
(5) Communication partner's conversation skills	<p>Unsupportive conversation behaviours</p> <ul style="list-style-type: none"> – Not adjusting communication (Ashton et al., 2008; Barnes & Ferguson, 2015; Hersh et al., 2016; Howe et al., 2008b, 2008a; Blom Johansson et al., 2012; O'Halloran et al., 2011; Purdy & Hindenlang, 2005; Simmons-Mackie et al., 2007; Simmons-Mackie, 2018) – Misusing strategies (Blom Johansson et al., 2012; Purdy & Hindenlang, 2005; Simmons-Mackie, 2018) 	<p>Supportive conversation strategies</p> <ul style="list-style-type: none"> + Understanding individual needs (using the “right” strategies) (Ashton et al., 2008; Blom Johansson et al., 2013; Howe et al., 2008a; Simmons-Mackie, 2018) + How communication partners adjust their communication (Barnes & Ferguson, 2015; Blom Johansson et al., 2012, 2013; Blonski et al., 2014; Grohn et al., 2012; Hersh et al., 2016; Horton et al., 2016; Howe et al., 2008a; Jensen et al., 2015; Blom Johansson et al., 2012; Luck & Rose, 2007; O'Halloran et al., 2011; Purdy & Hindenlang, 2005; Simmons-Mackie et al., 2007; Simmons-Mackie, 2018)
(6) Physical and emotional factors	<p>Fatigue and stress</p> <ul style="list-style-type: none"> – Fatigue for the person with aphasia (Dalemans et al., 2008; Blom Johansson et al., 2012; J Murphy, Tester, Hubbard, Downs, & MacDonald, 2005) – Stress for the person with aphasia, staff, carers (Blom Johansson et al., 2012) 	
(7) Aphasia	<p>Presence of aphasia and its severity</p> <ul style="list-style-type: none"> – Not accepting the aphasia (Blom Johansson et al., 2013; Hilton et al., 2014) – Not equipped for severe aphasia (Blom Johansson et al., 2013; Horton et al., 2016) 	

Physical environment themes	Barrier sub-themes	Facilitator sub-themes
	<i>Unsupportive physical environment</i>	<i>Supportive physical environment</i>
(1) Written information	<ul style="list-style-type: none"> – <i>Complex information</i> (Ashton et al., 2008; Eames, McKenna, Worrall, & Read, 2003; Greig, Harper, Hirst, Howe, & Davidson, 2008; Howe et al., 2008b) – <i>Complicated format (font/ layout)</i> (Eames et al., 2003; Greig et al., 2008; Hoffmann & McKenna, 2006; Howe et al., 2008a; Rose, Worrall, Hickson, & Hoffmann, 2011a) 	<ul style="list-style-type: none"> + <i>Simple and consistent written information</i> (Ashton et al., 2008; Brandenburg, Worrall, Copland, & Rodriguez, 2017; Eames et al., 2003; Egan, Worrall, & Oxenham, 2004; Hoffmann & McKenna, 2006; Howe et al., 2008a; Purdy & Hindenlang, 2005; Rose et al., 2011; Rose, Worrall, & McKenna, 2003) + <i>Clear format (font/layout/colour)</i> (Brandenburg et al., 2017; Grohn et al., 2012; Howe et al., 2008a; Rose et al., 2011; Rose, Worrall, Hickson, & Hoffmann, 2012; Rose et al., 2003)
(2) Pictures and images	<ul style="list-style-type: none"> – <i>Lack of clear visual aids</i> (Eames et al., 2003; Greig et al., 2008) – <i>Negative perceptions of pictures</i> (Rose et al., 2011, 2012; Rose et al., 2003) 	<ul style="list-style-type: none"> + <i>Relevant pictures and images to support text</i> (Dalemans et al., 2008; Dietz, Hux, McKelvey, Beukelman, & Weissling, 2009; Eames et al., 2003; Greig et al., 2008; Howe et al., 2008a; Rose et al., 2011, 2012; Rose et al., 2003) + <i>Giving choice</i> (Rose et al., 2012)
(3) Communication support tools	<ul style="list-style-type: none"> – <i>Technology</i> (Dietz et al., 2013) – <i>Communicating abstract ideas</i> (Murphy & Boa, 2012) 	<ul style="list-style-type: none"> + <i>Concrete visual representations</i> (Dietz et al., 2013; Grohn et al., 2012; Murphy et al., 2005; Murphy & Boa, 2012) + <i>Considering options and making decisions</i> (Bornman & Murphy, 2006; Murphy & Boa, 2012)
(4) Place and structure	<ul style="list-style-type: none"> – <i>Busy or noisy environment</i> (Egan et al., 2004; Horton et al., 2016; Howe et al., 2008a; Blom Johansson et al., 2012) – <i>Unfamiliar environment</i> (Howe et al., 2008a, 2008b; Blom Johansson et al., 2012) 	<ul style="list-style-type: none"> + <i>Quiet</i> (Howe et al., 2008a) + <i>Structured and tailored tasks</i> (Ashton et al., 2008; Blonski et al., 2014; Howe et al., 2008b; O'Halloran et al., 2011)

Communication partner

Seven communication partner themes were identified, consisting of seven barrier and five facilitator sub-themes (see Table 1). Each theme is presented below, with reference to related sub-themes.

1. “Implementation of accessibility strategies”. Service level barriers and support impacted on implementation of accessibility strategies for people with aphasia.

Service-level barriers included lack of training and awareness of accessibility strategies, and lack of rehabilitation staff continuity. A lack of understanding of aphasia, accessibility, and how to accommodate communication needs was reported by four articles (Hilton et al., 2014; Howe et al., 2008a; Jensen et al., 2015; Simmons-Mackie et al., 2007). A qualitative evaluation of a team-based staff training intervention to improve aphasia accessibility in acute, rehabilitation, and long-term care settings found that staff tended to view communicative access as the responsibility of speech and language therapists (SLTs) (Simmons-Mackie et al., 2007).

In their synthesis of literature on the views of family members on aphasia intervention needs, Hilton et al. (2014) found that family members reported inadequate understanding and education about aphasia to implement communication strategies (Hilton et al., 2014). Howe et al.’s (2008a) qualitative study investigating environmental factors influencing community participation for people with aphasia and Jensen et al.’s (2015) mixed methods study implementing communication partner training for nursing staff in an inpatient stroke unit similarly reported that a lack of knowledge about communication needs negatively impacted on accessibility. Simmons-Mackie et al. (2007) highlighted that high staff turnover could also be a barrier to implementing accessible strategies, as it would increase training demands.

Service-level support included having a centralised support team and ongoing training and support. Having a dedicated aphasia team or trainers from among the rehabilitation staff, responsible for supporting accessibility strategies and training, was found to facilitate accessibility strategy implementation in a long-term residential care facility (Simmons-Mackie et al., 2007).

Continued staff training and support, rather than one-off training workshops, also appeared important to maintain accessible practice (Horton et al., 2016; Jensen et al., 2015; Simmons-Mackie et al., 2007). Horton et al. (2016) conducted a qualitative study evaluating supported communication training with multi-disciplinary stroke unit staff. Training consisted of workshops utilising video examples and individual and group sessions delivered by a person trained in supported communication techniques (e.g. SCA™) and feedback from people with aphasia (Horton et al., 2016). Additional support such as learning logs and training reviews were included (Horton et al., 2016). Findings suggested that the training workshops could help to achieve and sustain a culture of inclusivity for people with aphasia in stroke rehabilitation units (Horton et al., 2016).

2. “Time” addressed the need for time to make communication accessible. *Lack of time* included not enough time given to the conversation and fast pacing of the conversation. In three studies, healthcare staff reported frustration with the extra time taken in conversation with stroke survivors with aphasia (Hersh, Godecke, Armstrong, Ciccone, & Bernhardt, 2016; Horton et al., 2016; Jensen et al., 2015). Staff working in inpatient stroke and rehabilitation units also reported scheduling constraints and limited time with individual patients as barriers to implementing supported communication strategies (Horton et al., 2016; Simmons-Mackie et al., 2007). Horton et al. (2016)

found that some staff members felt their time management improved following supported communication training.

Barriers reported by people with aphasia included communication partners speaking too quickly and not allowing enough time for them to speak or process information (Ashton et al., 2008; Blonski et al., 2014; Croteau et al., 2004; Blom Johansson, Carlsson, & Sonnander, 2012; O'Halloran et al., 2011; Purdy & Hindenlang, 2005). In an ethnographic study of a hospital stroke ward, O'Halloran et al. (2011) observed that nurses tended to limit talk to practical tasks and rush interactions with patients with aphasia.

A communication environment with *enough time* included more time given to the duration and pacing of the conversation. Communication partners providing extra time and slowing their rate of speech were reported as facilitators in eight studies set in a range of settings and including interactions with carers, staff members, and people with aphasia (Blom Johansson, Carlsson, Östberg, & Sonnander, 2012; Blonski et al., 2014; Dalemans et al., 2008; Grohn, Worrall, Simmons-Mackie, & Brown, 2012; Howe et al., 2008a; Howe, Worrall, & Hickson, 2008b; Blom Johansson, Carlsson, & Sonnander, 2012; Luck & Rose, 2007).

3. "Participation of the person with aphasia" addressed issues of inclusion. *Excluding the person with aphasia* involved controlling the conversation and "speaking for" them. Carers or staff were observed "holding the floor" or directing the conversation in response to the stroke survivor with aphasia's communication difficulties (Croteau et al., 2004; Hersh et al., 2016; Jensen et al., 2015; Blom Johansson et al., 2012; Purdy & Hindenlang, 2005; Simmons-Mackie et al., 2007).

Staff enacted "speaking for" behaviours by speaking to carers instead of involving the person with aphasia, particularly when the aphasia was severe (Croteau &

Le Dorze, 2006; Croteau et al., 2004; Dalemans et al., 2008; Hersh et al., 2016; Howe et al., 2008a; Jensen et al., 2015). Hersh et al. (2016) investigated nurses' interactions with stroke survivors on an acute stroke ward. They found that the presence of a family member reduced the engagement of a patient with severe aphasia in conversations with the nurse and that increased engagement was noted when the family member was absent (Hersh et al., 2016). Croteau et al. (2004) observed conversations between stroke survivors with aphasia and carers to measure "speaking for" behaviours and found that some spouses engaged in behaviours such as answering questions directed to the person with aphasia and contributing to conversations without invitation.

Including the person with aphasia involved giving opportunities to communicate and managing "speaking for" behaviours. Grohn et al. (2012) and O'Halloran et al. (2011) found that communication was facilitated when stroke survivors with aphasia were actively included and given the chance to communicate in a way that suited them. Hersh et al. (2016) found that staff could also manage carers or others "speaking for" the person with aphasia by re-directing the conversation back to the person with aphasia and avoiding speaking only to the carer.

4. "Communication partner's approach to strategies" addressed how staff and carers approached learning and using communication strategies with stroke survivors with aphasia. A *negative approach to strategies from staff/carers* included having a negative attitude, being impatient, or avoiding strategies. Hilton et al. (2014) found that some family members were reluctant to use strategies because they did not want to focus on the stroke survivor's communication impairment, as their focus was on recovery, or they wanted to protect the feelings of the person with aphasia.

In their study implementing the Supported Conversation for adults with Aphasia (SCA™) technique with inpatient stroke unit staff, Jensen et al. (2015) found that prior

to training, staff perceived that strategies would not be useful. Both Jensen et al. (2015) and Simmons-Mackie et al. (2007) found a tendency for staff and carers to meet communication difficulties with impatience or frustration.

Having a *positive approach to strategies from staff/carers* included staff/carer readiness and willingness to learn and use strategies (Blom Johansson et al., 2013). Several studies also reported that having a positive attitude was helpful, and this could take the form of showing interest (Blom Johansson et al., 2012), being prepared to be wrong (Horton et al., 2016), and being sensitive to frustration from the person with aphasia (Purdy & Hindenlang, 2005).

5. “Communication partner’s conversation skills” addressed communication partners’ behaviours and strategies that influenced the accessibility of a conversation. *Unsupportive conversation behaviours* included not adjusting communication and misusing strategies. Communication partners rapidly firing questions (Purdy & Hindenlang, 2005), not using eye contact (Purdy & Hindenlang, 2005), and giving up conversations when they were difficult (Blom Johansson et al., 2012; Purdy & Hindenlang, 2005; Simmons-Mackie et al., 2007) were examples of not adjusting communication. Misusing strategies included over-use or incorrect use of strategies, such as using too many gestures or an excessively slow rate of speech (Blom Johansson et al., 2012; Purdy & Hindenlang, 2005; Simmons-Mackie, 2018).

Supportive conversation strategies included understanding individual needs (using the right strategies) and how communication partners adjusted their communication. Understanding the individual’s aphasia and tailoring communication accordingly were reported as facilitators by four studies (Ashton et al., 2008; Blom Johansson et al., 2013; Howe et al., 2008a; Simmons-Mackie, 2018). Ashton et al. (2008) observed barriers and facilitators for people with aphasia using public transport.

Examples of facilitators included personalised travel information, such as specific route and map printouts for a person's journey and drivers and staff accommodating communication needs (Ashton et al., 2008).

Several studies reported specific communication strategies, also called supported conversation techniques, such as using closed questions and asking them one at a time (Blom Johansson et al., 2012; Horton et al., 2016; Jensen et al., 2015), checking that the person with aphasia and the communication partner had understood each other (Blom Johansson et al., 2012; Grohn et al., 2012; Horton et al., 2016; Jensen et al., 2015; Luck & Rose, 2007; O'Halloran et al., 2011), and re-phrasing or paraphrasing responses (Luck & Rose, 2007; O'Halloran et al., 2011; Purdy & Hindenlang, 2005).

6. "Physical and emotional factors" related to *stress and fatigue*. Stroke survivors with aphasia reported that their own stress and fatigue increased their communication difficulties, e.g. struggling to find the right word or focus on the conversation (Dalemans et al., 2008; Blom Johansson et al., 2012; Murphy et al., 2005). Dalemans et al. (2008) explored social participation for stroke survivors with aphasia and found that fatigue was a barrier to participating in interview conversations. Non-verbal signs of fatigue were important signals to communication partners. Staff and carer stress was also found to have a negative impact on conversations (Blom Johansson et al., 2012). There were no facilitators reported for this theme.

7. "Aphasia" included carers and health professionals' perspectives on the *presence of aphasia and its severity*. Non-SLT staff, such as nurses, reported aphasia as a barrier and believed that they did not have the tools and skills to accommodate the communication needs of stroke survivors with severe aphasia (Blom Johansson et al., 2013; Horton et al., 2016). Blom Johansson et al. (2013) and Hilton et al. (2014) found that some carers wanted the impairment to improve before using strategies.

Consequently, they were not receptive to SLT explanations of the impact of aphasia and importance of strategies. There were no facilitators reported for this theme.

Physical environment

Four physical environment themes were identified, including eight barrier and eight facilitator sub-themes (see Table 1). Each theme is presented below, with reference to related sub-themes.

1. “Written information” barriers included *complex information* and *complicated format (font/ layout)*. The use of complex or technical language was reported as a barrier by stroke survivors with aphasia (Ashton et al., 2008; Eames, McKenna, Worrall, & Read, 2003; Greig, Harper, Hirst, Howe, & Davidson, 2008; Howe et al., 2008b). Ashton et al. (2008) found that some people with aphasia struggled to read transport information such as timetables due to complicated formatting and too much information. Formatting barriers included too much text (Eames et al., 2003; Greig et al., 2008; Rose et al., 2011a), small font (Eames et al., 2003; Greig et al., 2008; Hoffmann & McKenna, 2006; Rose et al., 2011a), and a complicated layout making it difficult to distinguish sections or key information (Eames et al., 2003; Hoffmann & McKenna, 2006; Howe et al., 2008a; Rose et al., 2011a).

“Written information” facilitators included *simple and consistent written information* and *clear format (font/ layout/ colour)*. Straight to the point, simple, and consistent language made text more accessible (Ashton et al., 2008; Eames et al., 2003; Howe et al., 2008a; Rose et al., 2011a; Rose et al., 2003). Accessible or “aphasia-friendly” formatting principles included san-serif font, large font (more than 12-point) (Grohn et al., 2012; Rose et al., 2011a, 2012; Rose et al., 2003), at least 1.5 line spacing and space between paragraphs (Howe et al., 2008a; Rose et al., 2011a, 2012; Rose et al.,

2003), and highlighting key information using bold, capitals, underlining, and colour coding (Brandenburg et al., 2017; Rose et al., 2011a).

2. “Pictures and images” barriers included *lack of clear visual aids* and *negative perceptions of pictures*. Not having pictures to support text or having pictures that were difficult to interpret were reported as barriers for people with aphasia (Eames et al., 2003; Greig et al., 2008). Two studies (Rose et al., 2012; Rose et al., 2003) found that most stroke survivors with aphasia surveyed found pictures helpful to accompany text. However, Rose et al. (2011a), evaluating the acceptability of different types of aphasia-friendly patient education materials, reported that some participants found written materials with a high volume of pictures to be childish and embarrassing.

Including *relevant pictures and images to support text* and *giving choice* facilitated understanding for people with aphasia. High-context or relevant pictures that could be easily interpreted were favoured. Pictures were generally preferred to no pictures, graphics were preferred to line drawings, and colour photographs were preferred to graphics (Dietz et al., 2009; Rose et al., 2011a, 2012; Rose et al., 2003). However, the findings from the above studies also emphasised the need for choice, as not all stroke survivors with aphasia appreciated or needed the same level of accessible materials (Rose et al., 2012).

3. “Communication support tools” barriers included *technology* and *communicating abstract ideas*. A qualitative study exploring carers’ and stroke survivors’ views on alternative and augmentative communication (AAC) found that some carers struggled to understand the artificial speech output produced by high-tech AAC devices (Dietz et al., 2013). Murphy and Boa (2012) reported case vignettes describing goal setting with people with communication difficulties. They reported that in the context of goal setting conversations, communicating and determining priorities

with stroke survivors with aphasia was difficult without support tools due to the need to discuss abstract ideas, such as hopes or aims for recovery (Murphy & Boa, 2012).

“Communication support tools” facilitators included the availability of *concrete visual representations* and tools such as pictures and symbols to support *considering options and making decisions*. Three studies described Talking Mats™, a support tool that uses picture/symbol cards placed on a mat to facilitate conversations and decision making with people with communication difficulties (Bornman & Murphy, 2006; Murphy et al., 2005; Murphy & Boa, 2012). Having pictures that stroke survivors could take ownership of and physically place on a mat assisted in identifying topics and priorities for discussion during goal setting conversations, such as communication and self-care (Murphy et al., 2005; Murphy & Boa, 2012). Using the picture cards and pre-determined topic areas, stroke survivors could review the options in front of them and make decisions about goals they wanted to pursue (Bornman & Murphy, 2006; Murphy & Boa, 2012).

4. “Place and structure” barriers included a *busy or noisy environment* and an *unfamiliar environment*. Distractions in the form of noise or background activity impacted on communication for people with aphasia, as it made it more difficult to focus on the conversation (Egan et al., 2004; Horton et al., 2016; Howe et al., 2008a; Blom Johansson et al., 2012). Unfamiliar places and situations such as seeing a new doctor required more cognitive processing, leaving less focus available for communication (Howe et al., 2008a, 2008b; Blom Johansson et al., 2012).

“Place and structure” facilitators included *quiet* and *structured and tailored tasks*. A quiet environment allowed stroke survivors with aphasia to focus on the conversation (Howe et al., 2008a). Tailored tasks with a consistent structure were reported to reduce the cognitive load and improve communication accessibility (Ashton

et al., 2008; Blonski et al., 2014; Howe et al., 2008b; O'Halloran et al., 2011). Blonski et al. (2014) conducted a qualitative study exploring experiences of stroke survivors with aphasia participating in community exercise programmes. Stroke survivors reported that consistent class formats in a community exercise programme and tailoring exercises to suit individual needs facilitated access and participation for them (Blonski et al., 2014).

Model to support accessible goal setting

Further analysis of the interrelationships between the main themes informed development of a proposed model for accessible goal setting (Figure 2). The model outlines what can be considered to enhance accessible goal setting practice for stroke survivors with aphasia.

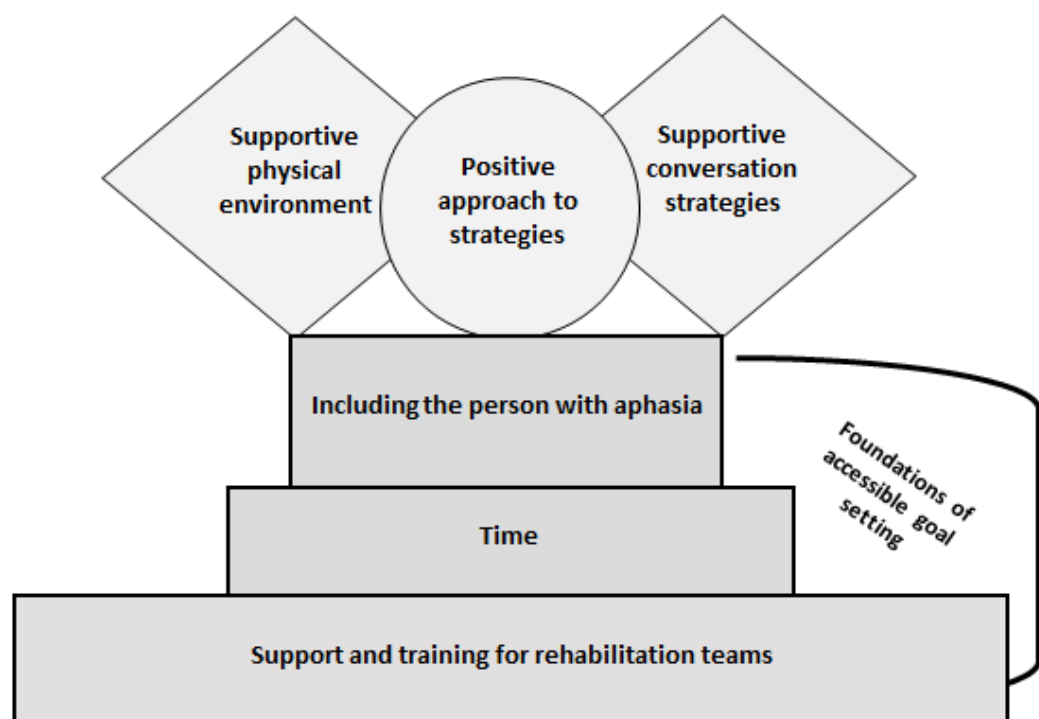


Figure 2. Proposed model to support accessible goal setting practice

Supportive physical environment and *supportive conversation strategies* sit at

the top of the model. Although we propose that they are essential for an accessible goal setting process, our findings suggest that without the support of the foundation components, their optimal use and ongoing implementation will be compromised.

The main foundation of the model, *support and training for rehabilitation teams*, includes the training and ongoing support needed for rehabilitation staff to implement accessible goal setting. Components higher up in the model, such as supportive conversation strategies, may not be implemented effectively or at all without training (Jensen et al., 2015; Simmons-Mackie et al., 2007).

We propose that sufficient *time* needs to be allocated to interactions between staff, stroke survivors with aphasia, and carers to have appropriately paced, supportive goal setting conversations. Staff are often bound by tight schedules (Horton et al., 2016; Jensen et al., 2015; Simmons-Mackie et al., 2007), which could affect their ability to allow the additional time needed for supportive goal setting conversations.

Results indicated a tendency among healthcare staff and carers to exclude people with aphasia from conversations (Croteau & Le Dorze, 2006; Croteau et al., 2004; Dalemans et al., 2008; Hersh et al., 2016). The third foundation component is therefore *including the person with aphasia*, a necessary pre-requisite for a supportive physical environment and conversation strategies.

The three foundations of the model facilitate a *supportive physical environment*, *positive approach to strategies*, and *supportive conversation strategies*. A positive approach to strategies is enacted by being open to learning strategies, respectful, and sensitive to communication challenges faced by people with aphasia (Blom Johansson et al., 2013; Horton et al., 2016; Blom Johansson et al., 2012; Purdy & Hindenlang, 2005). This could encourage flexibility and willingness to problem solve, which may be required in the context of goal setting to adapt to individual needs.

Supportive physical environment involves creating quiet and familiar places and task structures (e.g. using a predictable format and questions for setting goals and checking in with progress) as the basis for communication support tools and goal setting resources that utilise modified written information and images (see Table 1).

Supportive physical environment is balanced with *supportive conversation strategies* (see Table 1). Results indicated that verbal or conversation support was helpful for explaining written material (Howe et al., 2008a), and written material was helpful for understanding conversations (Howe et al., 2008a; Purdy & Hindenlang, 2005). Rehabilitation staff can use both a supportive physical environment (with specific and flexible resources) and supportive conversation strategies as part of goal setting conversations to help stroke survivors with aphasia to participate successfully in rehabilitation.

Recommendations to inform accessible goal setting practice

In Table 2, we present our evidence-based recommendations for a supportive physical environment and supportive conversation strategies, formulated from the barriers and facilitators identified in the first stage of analysis. Both the goal setting and goal pursuit phases of the goal setting process involve conversation and take place in a physical environment. Our recommendations include methods for adapting the physical environment and supportive conversation strategies to make goal setting conversations and resources more accessible for stroke survivors with aphasia.

(Table 2 here – landscape pages)

Table 2. Recommendations to inform accessible goal setting for stroke survivors with aphasia

		Recommendations	Supporting references	Relevance to accessible goal setting
Supportive physical environment	<i>Place and structure</i>	- Maintain a quiet environment with minimal background noise and activity	(Howe et al., 2008a)	- Hold goal setting conversations in a quiet and familiar setting, where possible - Prepare the stroke survivor (and family) by explaining the goal setting process and what will happen in the goal setting and goal pursuit phases
		- Use a predictable structure or format for tasks, using consistent steps and questions each time	(Ashton et al., 2008; Blonski et al., 2014; Howe et al., 2008b; O'Halloran et al., 2011)	- Use a similar format for each goal setting conversation, e.g. reiterate process, review goals and progress, then plan adjustments/new goals - Consider use of an accessible diagram outline of the goal setting process that can be referred to within and between sessions to increase consistency and predictability
	<i>Communication support tools</i>	- Have basic or low-tech communication tools at hand wherever possible, such as symbol/picture cards or visual scales, ensuring that the person with aphasia has the chance to lead the conversation	(Bornman & Murphy, 2006; Dietz et al., 2013; Grohn et al., 2012; Murphy & Boa, 2012)	- Tools such as Talking Mats™, symbol cards, pen and paper, whiteboards, or relevant photographs provided by the stroke survivor or family can be used to support accessible goal setting discussions

	<i>Written information</i>	- Use simple language that is straight to the point, avoiding technical language or information overload	(Eames et al., 2003; Howe et al., 2008a; Rose et al., 2011a; Rose et al., 2003)	- Provide information about goal setting in simple terms, e.g. talking about “ <i>deciding what’s important to you</i> ” and “ <i>working on your goals</i> ” instead of “ <i>goal planning</i> ” and “ <i>goal pursuit</i> ”)
		- Use large (more than 12-point), sans serif font	(Grohn et al., 2012; Rose et al., 2011a, 2012; Rose et al., 2003)	- Provide an accessible copy of stroke survivors’ goals, plans, and progress
		- Use 1.5 line spacing and leave space between main sections of text	(Howe et al., 2008a; Rose et al., 2011a, 2012; Rose et al., 2003)	- Ensure all written material is formatted accessibly
		- Use colour and bold text to highlight key information and make headings clear and distinctive	(Brandenburg et al., 2017; Rose et al., 2011a)	
	<i>Pictures and images</i>	- Use pictures that are relevant to the text, preferably colour photographs or graphics	(Dietz et al., 2009; Greig et al., 2008; Rose et al., 2011a, 2012; Rose et al., 2003)	- Use pictures to help explain goal setting concepts, e.g. a list or notebook image to illustrate planning and keeping track of goals
		- Give a choice of materials with or without images or with different types of images	(Rose et al., 2012)	- Provide options for accessible goal setting materials, e.g. with or without images, different types of images - Support stroke survivors to choose goal setting materials that suit them
Supportive	- Find out about the person’s aphasia and their individual communication needs	(Ashton et al., 2008; Blom Johansson et al., 2013; Howe et al., 2008a; Simmons-Mackie, 2018)	- Get to know the person with aphasia (with help from carers/family members where appropriate) and find out which conversation strategies work for them before beginning the goal setting process – <i>this can be led by a speech language therapist</i>	

- Include the person with aphasia in the goal setting conversation (avoid speaking for them or only to others), and give the person with aphasia the opportunity to speak without being interrupted	(Grohn et al., 2012; Hersh et al., 2016; O'Halloran et al., 2011)	<p><i>but shared by all staff</i></p> <ul style="list-style-type: none"> - Keep a list of the stroke survivor's preferred conversation strategies and support tools (e.g. an individual communication profile) with their goal setting record so that all staff working with them (including new/temporary staff) are aware of how to communicate with them - Involve carers/ family members in goal setting conversations where suitable, while supporting the person with aphasia to communicate as independently as possible - Allow time to use supportive conversation strategies and to explain and reiterate the goal setting process at each stage - Adjust use of strategies throughout the goal setting process to ensure goal setting is person-centred and that the stroke survivor is engaged in conversations in a way that suits them
- Give extra time for the person with aphasia to process information and respond	(Grohn et al., 2012; Howe et al., 2008a; Blom Johansson et al., 2012; Purdy & Hindenlang, 2005)	
- Speak more slowly	(Horton et al., 2016; Howe et al., 2008a, 2008b; Blom Johansson et al., 2012; Purdy & Hindenlang, 2005)	
- Be patient – avoid becoming frustrated if there is miscommunication	(Horton et al., 2016; Howe et al., 2008a, 2008b; Blom Johansson et al., 2012; Purdy & Hindenlang, 2005)	
- Use non-verbal communication strategies such as gestures, drawing pictures, and pen and paper	(Blom Johansson et al., 2012; Blonski et al., 2014; Hersh et al., 2016; Horton et al., 2016)	
- Suggest words, give an example of how to do the task, provide response choices, or repeat key words	(Blom Johansson et al., 2012; Grohn et al., 2012; Howe et al., 2008a; Luck & Rose, 2007; O'Halloran et al., 2011)	
- Use multiple strategies and combine them, such as using speech, writing, and drawing together, and maintain support through all conversations	(Horton et al., 2016; Blom Johansson et al., 2012; O'Halloran et al., 2011; Simmons-Mackie et al., 2007)	

	- Paraphrase or rephrase what has been said	(Luck & Rose, 2007; O'Halloran et al., 2011; Purdy & Hindenlang, 2005)	
	- Ask questions one at a time and try to use closed (yes/no) questions	(Blom Johansson et al., 2012; Horton et al., 2016)	
	- Look for non-verbal cues from the person with aphasia (e.g. body language, facial expressions, gestures)	(Horton et al., 2016; O'Halloran et al., 2011)	
	- Check in – check that you understand each other and the conversation pace is right	(Blom Johansson et al., 2012; Grohn et al., 2012; Horton et al., 2016; Luck & Rose, 2007; O'Halloran et al., 2011)	

Discussion

Our review has identified communication barriers and facilitators relevant to goal setting with stroke survivors with aphasia under the themes of *communication partner* and *aspects of the physical environment*. Our findings provide recommendations and a proposed model to support accessible goal setting. The recommendations and model can inform the development of resources and training to support stroke survivors with aphasia, their carers, and rehabilitation staff to engage collaboratively in setting and pursuing person-centred rehabilitation goals.

Our findings suggest four key implications for accessible goal setting: 1. There is a lack of research evidence specific to accessible goal setting for stroke survivors with aphasia; our recommendations and model to support accessible goal setting provide a valuable contribution but highlight the need for further research specific to goal setting with stroke survivors with aphasia; 2. A modified physical environment must be partnered with supportive conversation strategies; 3. Accessibility is the responsibility of all rehabilitation staff and carers; 4. Rehabilitation staff and carers require support and training to use accessible goal setting resources and conversation strategies; applying behaviour change theory may support practice change.

Evidence gaps and recommendations to support accessible goal setting

Results revealed very limited research specifically targeting accessible goal setting for stroke survivors with aphasia. Of the 33 studies included in the review, only three explicitly addressed goal setting with stroke survivors with aphasia (Bornman & Murphy, 2006; Murphy et al., 2005; Murphy & Boa, 2012). Murphy and Boa (2012) presented case studies demonstrating the Taking Mats™ tool with three stroke survivors with aphasia, and Murphy et al. (2005) conducted a qualitative study employing Talking Mats™ as an interview tool

with ten participants, two of whom had post-stroke aphasia. Bornman and Murphy (2006) presented case vignettes with two participants, one of whom had post-stroke aphasia. These three articles illustrated the use of communication support tools and concrete images to provide choice, such as in Talking Mats™, to support the first goal setting stage of determining priorities and negotiating goals with stroke survivors with aphasia. However, none of the articles sought to evaluate accessible goal setting with stroke survivors with aphasia.

A more recent qualitative study by Shrubsole et al. (2019) used interviews with SLTs to explore barriers and facilitators to uptake of aphasia guideline recommendations, which include provision of accessible information and patient-centred goal setting. Findings indicated that use of accessible information and goal setting tools was variable depending on factors such as context (e.g. acute ward or inpatient rehabilitation), access to time and resources, and beliefs (e.g. about appropriateness of interventions or their own skills). While this study highlighted important implications for uptake of guidelines in SLT practice, there is a lack of comparable research exploring barriers and facilitators in multi-disciplinary stroke teams, including how non-SLT staff can approach implementation of accessible goal setting recommendations.

The lack of evidence-based accessible goal setting resources for multi-disciplinary staff is an important evidence-practice gap, given that goal setting is recommended, without exception, in stroke rehabilitation guidelines (CCRE, 2014; Heart and Stroke Foundation, 2018; Stroke Foundation, 2017; RCP, 2016), and aphasia, affecting one third of stroke survivors (Macrae & Douglas, 2008), has been identified as a barrier to stroke survivors' participation in goal setting (Rohde et al., 2012). However, Shrubsole et al. (2019) have also identified that even where accessible tools are available in speech-language therapy practice, SLTs can experience barriers to implementing accessible goal setting, for example, due to

time and resource constraints or believing that the tools are not appropriate or that patients are not interested.

Our evidence-based recommendations, including supportive conversation strategies and methods for adapting the physical environment, aim to inform accessible goal setting for stroke survivors with aphasia. Our recommendations align with and contribute to other recommendations and guidance related to accessibility. The Stroke Association (2012) formulated guidelines for making information accessible, designed for people with aphasia and those who work with them. The guidelines provide an overview of formatting principles gathered from research studies and focus groups. The UK NICE guidelines (2013) for stroke rehabilitation underline the importance of adapting written information and providing communication skills training to conversation partners, but detailed information about how to do this is lacking. The Australian aphasia rehabilitation best practice statements (CCRE, 2014) guide the aphasia rehabilitation pathway and recommend providing communicatively accessible information, explaining goal setting in an accessible way, and providing communication training to health professionals.

Collectively, these guidelines and our recommendations can inform accessible goal setting practice. However, all draw on evidence from heterogeneous studies, set in different contexts and addressing a range of communication interactions. Further targeted research with stroke survivors with aphasia, their families, and rehabilitation staff is required before specific recommendations are available to support accessible goal setting practice with stroke survivors with aphasia. Barriers to implementing recommendations in multi-disciplinary practice, as explored by Shrubsole et al. (2019) in SLT practice, should also be explored.

Combining a modified physical environment with supportive conversation strategies

A key component of our proposed model to support accessible goal setting practice is

combining the modified physical environment with supportive conversation strategies. While aphasia-friendly formatting and images may make written information more accessible, it is not enough to make the whole goal setting process accessible. Equally, supportive conversation strategies alone are not enough to facilitate accessibility. Studies evaluating training programmes for rehabilitation staff employed both modified resources and supportive conversation strategies to optimise accessibility (Horton et al., 2016; Jensen et al., 2015; Simmons-Mackie et al., 2007). Therefore, it is not sufficient to provide training and support to rehabilitation staff for only communication partner training or creating an accessible physical environment – we propose that the two components must work in tandem to be successful.

Sharing the responsibility for accessibility

In any context where communication is required, communication access is the business of all communication partners (Simmons-Mackie, 2018). Stroke rehabilitation, including goal setting, is typically delivered by multi-disciplinary teams including (but not limited to) occupational therapists, physiotherapists, SLTs, and healthcare assistants (Scobbie et al., 2015). Our model to support accessible goal setting therefore proposes training and support for *all* rehabilitation staff, not only SLTs. It is unacceptable for stroke survivors with aphasia to only be provided with accessible communication when working with SLTs on communication goals. Accessible goal setting means equal access to the range of goals that may be relevant to each stroke survivor.

It is important that all rehabilitation staff can support stroke survivors with aphasia to communicate their personal needs, preferences, and priorities to inform person-centred goals. However, findings from this review indicate that communication accessibility may be seen as only the domain of SLTs. Other healthcare staff may feel that communication is beyond their

discipline-specific expertise and not necessarily relevant outside of speech and language therapy (Simmons-Mackie et al., 2007). SLTs' role as communication specialists means that they are well placed to lead efforts to make goal setting accessible and provide support to other staff in the initial stages. However, the *responsibility* for communication accessibility must be shared among all disciplines.

Training and support

Our proposed model emphasises the need for support and training for rehabilitation teams as the foundation for accessible goal setting. Our results suggest that we cannot expect communication partners, whether staff or carers, to be intuitively skilled in making goal setting accessible. Nor can we expect that the time required will be routinely available. An updated systematic review of communication partner training in aphasia (Simmons-Mackie, Raymer, & Cherney, 2016) recommended implementation of communication partner training for carers and health providers of people with chronic aphasia. While research evaluating training specifically for accessible goal setting in multi-disciplinary teams is currently unavailable, existing programmes for communication partner training and stroke self-management can provide a starting point for future training guidelines and resources.

Simmons-Mackie et al. (2007) and Jensen et al. (2015) found positive results from implementing Supported Conversation for Adults with Aphasia (SCA™) techniques and tailor-made visual resources (e.g. image cards) with healthcare staff in hospital settings. While SCA™ itself requires specialist training, these studies demonstrate how staff training can be delivered using methods such as workshops and training aphasia team leaders.

Better Conversations with Aphasia is an e-learning programme designed to educate SLTs, people with aphasia, and their families about conversation therapy (Beeke et al., 2013). Although aimed at practicing or training SLTs; it provides an example of how

communication training can be delivered online to potentially reach more people than in-person training (Beeke et al., 2013).

The Bridges Self-Management Programme was developed to include accessible workbooks, and therapists or teams can undertake training workshops that cover awareness of communication differences (Jones et al., 2016; McKenna et al., 2013). While the emphasis of this training is on facilitating self-management rather than learning supported communication techniques for goal setting, it includes a person-centred approach and practical tools for delivering Bridges in clinical practice to people with a range of communication difficulties, including aphasia (Jones et al., 2016).

Carers are also key communication partners and may wish to be involved in goal setting (Howe et al., 2012). Communication partner training and resources such as the Stroke Association accessible information guidelines can be made available to support carers who want to be involved in goal setting. However, there does not appear to be training that specifically targets supporting communication partner training for carers in the context of goal setting. While not all stroke survivors with aphasia may have carers directly involved in their rehabilitation, relationships and social circles are identified as a key part of recovery goals (Worrall et al., 2011). Accessible goal setting training could include helping carers to apply supportive conversation strategies and use accessible resources. In this way, the responsibility for making goal setting accessible can be led by staff but shared with carers.

The application of behaviour change theory (e.g. Michie, van Stralen, & West, 2011) could inform implementation of accessible goal setting practice with rehabilitation staff. For example, Shrubsole, Worrall, Powers, and O'Connor (2018) used Michie et al.'s (2011) behaviour change wheel to inform implementation of a behaviour change intervention with SLTs, targeted at improving information provision and goal setting practice. By addressing relevant facilitators such as environmental restructuring (e.g. providing educational

resources) and modelling (e.g. role playing conversation with people with aphasia), the intervention proved to be an acceptable and feasible method for facilitating practice change (Shrubsole et al., 2018).

Limitations

Available literature covered varied topics across communication accessibility for aphasia, and there was a lack of literature specifically addressing accessible goal setting for stroke survivors with aphasia. Therefore, findings were compiled from a range of communication topics in different contexts in the literature and applied to goal setting theoretically. Further, including “stroke” as a required search term and searching abstracts only may have excluded articles that included people with aphasia as part of wider participant groups or did not focus on stroke as an aphasia aetiology.

Conclusions

Our review highlights the need for service-level training and support so that rehabilitation staff can apply supportive conversation strategies and create an accessible physical environment for goal setting with stroke survivors with aphasia. We have proposed a model to support accessible goal setting. Further, our recommendations, targeted to multi-disciplinary teams, are based on evidence supporting the use of conversation strategies and a modified physical environment. More research is required to develop and evaluate accessible goal setting resources, training, and support for rehabilitation staff and carers so that guidelines are based on strong evidence. Further research is also required to investigate relationships between the key components proposed in this model and how each could be prioritised to optimise implementation of an accessible goal setting process. Given the prevalence of aphasia among stroke survivors, improving accessibility in goal setting and in

all aspects of the rehabilitation pathway is essential for all stroke survivors to have equal access to rehabilitation opportunities.

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Appendices

Appendix A: Search terms represented and CINAHL search strategy

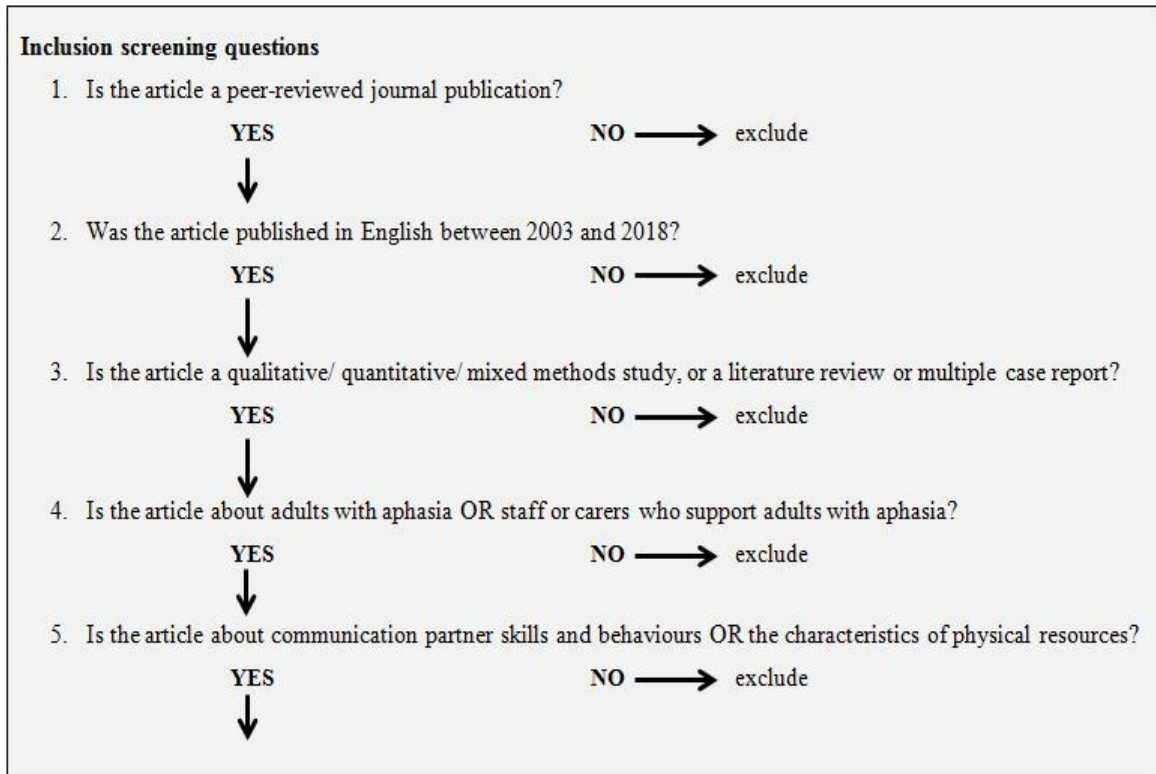
Keywords

- stroke
- aphasia / dysphasia / aphasic / dysphasic / language impairment / communication impairment / communication disability
- accessibility / facilitator / support / modify / adapt / assist / aphasia-friendly
- barrier / difficulty / challenge / limitation

CINAHL search string

1. AB stroke
 2. AB aphasi* OR AB dysphasi* AB language impairment* OR AB communication impairment* OR AB communication disabilit*)
 3. 1 AND 2
 4. AB access* OR AB facilitat* OR support* OR AB modif* OR AB adapt* OR assist* OR AB friendly
 5. AB barrier* OR AB difficult* OR AB challeng* OR AB limit*
 6. 4 OR 5
 7. 3 AND 6
- AB = abstract; * = truncation (e.g. access* covers access, accessible, accessibility, etc.)

Appendix B: Inclusion screening questions



Appendix C: Data extraction table template

- (1) Communication partner skills and behaviours** (e.g. training programmes, techniques, observations/descriptions of behaviours that impact on communication)
- (2) Physical environment**
 - a. Written information (e.g. information sheets, timetables, signs)
 - b. Pictures and images (e.g. graphics on maps/signs and other information sources)
 - c. Communication support tools (e.g. picture cards, technology)
 - d. Place and structure (e.g. procedures, noise, room set-up or facilities)

Reference	Aims	Participants	Methods	Key findings relevant to goal setting	
				(i) Communication partner	(ii) Physical environment
				Barriers: Facilitators:	<i>*label (a), (b), (c), or (d) where findings relate to corresponding aspects of physical environment</i> Barriers: Facilitators:
				Barriers: Facilitators:	Barriers: Facilitators:
				Barriers: Facilitators:	Barriers: Facilitators:

Appendix D: Table of included studies and MMAT quality scores

Included studies	MMAT score
Ashton, C. , Aziz, N. A., Barwood, C., French, R., Savina, E., & Worrall, L. (2008). Communicatively accessible public transport for people with aphasia: A pilot study. <i>Aphasiology</i> , 22(3), 305–320.	75%
Barnes, S. , & Ferguson, A. (2015). Conversation partner responses to problematic talk produced by people with aphasia: some alternatives to initiating, completing, or pursuing repair. <i>Aphasiology</i> , 29(3), 315–336.	75%
Blom Johansson, M. , Carlsson, M., Östberg, P., & Sonnander, K. (2012). Communication changes and SLP services according to significant others of persons with aphasia. <i>Aphasiology</i> , 26(8), 1005–1028.	75%
Blom Johansson, M. , Carlsson, M., Östberg, P., & Sonnander, K. (2013). A multiple-case study of a family-oriented intervention practice in the early rehabilitation phase of persons with aphasia. <i>Aphasiology</i> , 27(2), 201–226.	50%
Blom Johansson, M. , Carlsson, M., & Sonnander, K. (2012). Communication difficulties and the use of communication strategies: from the perspective of individuals with aphasia. <i>International Journal of Language & Communication Disorders</i> , 47(2), 144–155.	75%
Blonski, D. C. , Covert, M., Gauthier, R., Monas, A., Murray, D., O’Brien, K. K., Huijbregts, M. (2014). Barriers to and facilitators of access and participation in community-based exercise programmes from the perspective of adults with post-stroke aphasia. <i>Physiotherapy Canada</i> , 66(4), 367–375.	100%
Bornman, J. , & Murphy, J. (2006). Using the ICF in goal setting: Clinical application using Talking Mats®. <i>Disability and Rehabilitation: Assistive Technology</i> , 1(3), 145–154.	N/A (case vignettes)
Brandenburg, C. , Worrall, L., Copland, D., & Rodriguez, A. D. (2017). Barriers and facilitators to using the CommFit™ smart	75%

phone app to measure talk time for people with aphasia. <i>Aphasiology</i> , 31(8), 901–927.	
Croteau, C., & Le Dorze, G. (2006). Overprotection, “speaking for”, and conversational participation: A study of couples with aphasia. <i>Aphasiology</i> , 20(2–4), 327–336. Croteau, C., Vychytil, A.-M., Larfeuil, C., & Le Dorze, G. (2004). “Speaking for” behaviours in spouses of people with aphasia: A descriptive study of six couples in an interview situation. <i>Aphasiology</i> , 18(4), 291–312.	75%
Dalemans, R. J. P., De Witte, L. P., Wade, D. T., & Van den Heuvel, W. J. A. (2008). A description of social participation in working-age persons with aphasia: A review of the literature. <i>Aphasiology</i> , 22(10), 1071–1091.	50%
Dietz, A., Hux, K., McKelvey, M. L., Beukelman, D. R., & Weissling, K. (2009). Reading comprehension by people with chronic aphasia: A comparison of three levels of visuographic contextual support. <i>Aphasiology</i> , 23(7–8), 1053–1064.	75%
Dietz, A., Thiessen, A., Griffith, J., Peterson, A., Sawyer, E., & McKelvey, M. (2013). The renegotiation of social roles in chronic aphasia: Finding a voice through AAC. <i>Aphasiology</i> , 27(3), 309–325.	100%
Eames, S., McKenna, K., Worrall, L., & Read, S. (2003). Grand rounds. The suitability of written education materials for stroke survivors and their carers. <i>Topics in Stroke Rehabilitation</i> , 10(3), 70–83.	100%
Egan, J., Worrall, L., & Oxenham, D. (2004). Accessible Internet training package helps people with aphasia cross the digital divide. <i>Aphasiology</i> , 18(3), 265–280.	100%
Greig, C.-A., Harper, R., Hirst, T., Howe, T., & Davidson, B. (2008). Barriers and facilitators to mobile phone use for people with aphasia. <i>Topics in Stroke Rehabilitation</i> , 15(4), 307–324.	75%
Grohn, B., Worrall, L., Simmons-Mackie, N., & Hudson, K. (2014). Living successfully with aphasia during the first year post-stroke: A longitudinal qualitative study. <i>Aphasiology</i> , 28(12), 1405–1425.	100%

Hersh, D., Godecke, E., Armstrong, E., Ciccone, N., & Bernhardt, J. (2016). “Ward talk”: Nurses’ interaction with people with and without aphasia in the very early period poststroke. <i>Aphasiology, 30</i> (5), 609–628.	75%
Hilton, R., Leenhouts, S., Webster, J., & Morris, J. (2014). Information, support and training needs of relatives of people with aphasia: Evidence from the literature. <i>Aphasiology, 28</i> (7), 797–822.	100%
Hoffmann, T., & McKenna, K. (2006). Analysis of stroke patients’ and carers’ reading ability and the content and design of written materials: recommendations for improving written stroke information. <i>Patient Education and Counseling, 60</i> (3), 286–293.	100%
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