

**MANUAL FOR TREATMENT OF READING, WRITING AND
ARITHMETIC FOR PERSONS WITH ADULT APHASIA-IN KANNADA
(MTR3A2-K)**

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CHAPTER I

INTRODUCTION

Aphasia refers to the loss of language following brain injury most commonly resulting from stroke. This will affect a person's ability to understand and produce the spoken and written messages. Although these impairments exist, the specific pattern depends on the location and extent of the brain lesions (Murdoch, 1990).

The treatment of aphasia is an extremely important aspect of life which in turn affects the individual's quality of life.

Reading and writing deficits are very common and persistent following stroke in literate adults. Acquired dyslexia occurs in persons with and without other language deficits, but these persons rarely receive dyslexia treatment. Few treatment methods for acquired dyslexia are available, and those treatments that are currently employed are often unsuccessful.

Reading comprehension deficits are frequent concomitants of aphasia. Persons with specific aphasic syndromes are likely to have reading patterns which reflect their auditory impairments. Reacquisition of a sophisticated skill such as reading is a very complex phenomenon and reading therapy practices are theoretically supported mainly by assumptions. However, the principles of treatment for reading disability are basically those used for other speech and language disabilities. It is sometimes noted that treatment of auditory processing deficits may facilitate reading comprehension skills (Murdoch, 1990).

Writing disturbances in persons with aphasia have often been considered as a secondary aspect of their communication disorder. Earlier, retraining in writing for aphasics was assumed only as an additional treatment task for 'global stimulation' of language.

However, recently researchers and practitioners have focused on selective intervention methods for retraining persons with aphasia in writing (Carlomagno & Iavarone, 1990 as cited in Murdoch, 1990).

Reading and writing deficits can be addressed by focusing on word retrieval using semantic tasks or the tasks that involve the re-learning of spelling to sound correspondence rules (Kiran, Thompson, & Hashimoto, 2001).

Treatment items that are personally relevant have a higher probability of affecting everyday communication. It is also important for SLPs to promote any form of communication output for individuals with aphasia, whether it is oral, written or gestural.

NEED FOR THE STUDY

Read and written language represent analogous functions for a visual language system. These two components are important in carrying out the various activities of daily living and vocation. Any impairment in reading and writing may hamper his/her participation in the society. Considering the present era of technology, the reading and writing has become an integral part of the system. Persons with aphasia find it difficult to cope in the society as a result of reading, writing and arithmetic impairment/s.

Authors have proposed a number of therapy techniques and manuals for the treatment of aphasia but, majority of them refers to the western population (English language) for example, the Manual for Aphasia Therapy developed by Longerich (1968). Also, the manuals available for reading and writing in the West cannot be used in India due to the vast ethno-cultural and language factors along with differences in orthographic and morpho-phonemic rules. In the Indian context, Manual for Adult Non-Fluent Aphasia Therapy-in Hindi (MANAT-H, Deshpande & Goswami, 2004), Manual for Adult Non-Fluent Aphasia

Therapy-in Kannada (MANAT-K, Venugopal & Goswami, 2005) and Manual for Adult Fluent Aphasia Therapy-in Kannada (MAFAT-K, Chaitra & Goswami, 2009) have been developed which focused mainly on aphasia therapy. Though these manuals contained a section on reading, writing and arithmetic, it has not been elaborative. Till date fewer attempts have been made by the professionals to develop a manual exclusively for treatment of reading, writing and arithmetic for the persons with aphasia (for adults) in the Indian context.

AIM OF THE STUDY

The main aim is to develop reading, writing and arithmetic treatment manual for persons with aphasia in Kannada.

CHAPTER II

REVIEW OF LITERATURE

Aphasia is described as “a multi-modality reduction in the capacity to decode (interpret) and encode (formulate) meaningful linguistic elements. It is manifested as difficulties in listening, reading, speaking and writing” (Darley, Aronson & Brown, 1975, as cited in Benson & Ardila, 1996).

Most clinicians and investigators agree that aphasia is not a loss of language (either vocabulary or rules) but is the result of impairments in processes necessary for comprehending, formulating and producing spoken and written language (Brookshire, 2003).

Reading and writing deficits in different types of aphasia:

In individuals with Broca’s aphasia, oral reading is effortful and nonfluent. Reading aloud is poor, with their reading comprehension being similar to auditory comprehension. Most patients with Broca’s aphasia have great difficulty (often total failure) in reading aloud. Reading comprehension is considerably better than reading aloud but most persons with Broca’s aphasia find reading difficult and avoids it (Benson, as cited in Benson & Ardila, 1996). Sparse and effortful writing is seen with omission of grammatic elements (agrammatic writing) in them. The written material contains multiple misspellings and the omission of letters. Individual letters formation will be clumsy, oversized and poor. Because most persons with Broca’s aphasia have concomitant hemiplegia, they are required to use their left hand for writing. These persons are better able to copy written material than they can write either to oral command or to dictation (Hegde, 2006).

In individuals with transcortical motor aphasia (TMA), reading aloud and reading comprehension both are better preserved than either speaking skills or writing skills. In

persons with transcortical motor aphasia-type I, reading ability, both aloud and for comprehension is always better than his writing, just as spoken language comprehension is better than expression of spoken language. Reading aloud tends to be slow and difficult to maintain, but reading comprehension is at normal level except for syntactically complex material (Benson & Ardila, 1996). In persons with transcortical motor aphasia-type II, reading aloud may be near-normal but reading comprehension is usually limited to matching of object to picture (Rubens, 1975). Writing problems persons with transcortical motor aphasia are generally similar to the writing problems of persons with Broca's aphasia. Sparse and clumsy writing is present with frequent misspellings (Hegde, 2006).

Persons with mixed transcortical aphasia presents with total impairment in reading aloud, reading comprehension and writing. Reading aloud and reading comprehension are severely limited and writing spontaneously is affected with writing to dictations being preserved (Bogousslavsky, Regli & Assal, 1988).

In persons with global aphasia, reading and writing deficits are parallel to their severe language deficits. Writing is unintelligible. Only few letters and strokes may be preserved (Hegde, 2006).

Most persons with Wernicke's aphasia may not recognize sounds associated with written words. They may fail to understand the meaning of printed words. They may not match or recognize the alphabets. They can write easily and effortlessly with well formed letters. They write neologistically with incorrect combination or omissions of letters. The written samples contain normal phrase and sentence lengths with word substitutions (paraphasic writing). Agrammatic writing like in Broca's aphasia is uncommon in these persons (Hegde, 2006). Unlike persons with Broca's aphasia, they write with their dominant hand and in cursive style. Their writing may full of misspelling of words and nonexistent

words. The persons with Wernicke's aphasia may be unaware of their writing problems (Murdoch, 1990).

Persons with transcortical sensory aphasia can read aloud normally, with word substitutions. The comprehension of the read material, however may be extremely limited or totally absent. They have relatively preserved oral reading skills. Writing contains paraphasic errors with frequent misspelling; somewhat comparable to the writing problems of persons with Wernicke's aphasia (Hegde, 2006).

In persons with conduction aphasia, most of them have difficulty reading aloud. Their oral reading may be filled with paraphasias, and they may simply fail to read short printed material. Nonetheless, they can silently read and comprehend long and complex material as a novel or a scientific book (Murdoch, 1990). Writing in persons with conduction aphasia is slow and effortful with letter omission, substitutions and addition errors. Grammar will be generally intact (Hegde, 2006).

Persons with anomic aphasia generally present with normal or near-normal oral reading and writing skills (Hegde, 2006).

Thus, the type of reading and writing problems are highly variant among different types of aphasia. Identification of impaired component of reading and writing is crucial factor in remediating these difficulties. Classification of dyslexia in aphasics begins with a general distinction between peripheral and central dyslexias. Main types are known as phonological dyslexia, surface dyslexia and deep dyslexias. Dyslexia classification in aphasia is arbitrary and is "not informative with respect to the nature of damage that underlies the reading disorder" (Hillis & Caramazza, 1992). There is no fixed relationship between dyslexia classification and diagnostic categories of aphasia. Different types of aphasia can have the

same reading impairment, and one type of aphasia such as Broca's aphasia can have different types of reading impairment (Hillis & Caramazza, 1992).

Manifestation of reading and writing problem is highly dependent on the script and orthography of the particular language also. The western models fail to provide adequate explanations for reading and writing problems in Indian languages which are transparent and alpha-syllabic in nature (Karanth, 2003).

Premorbid reading skills and current interest or need to read will dictate the extent of treatment required in these skills. Basic and functional reading skills may be useful treatment targets for those who are mildly or moderately aphasics (Brookshire, 2003).

Selecting individual-specific reading skills such as survival reading skills is an initial step of reading intervention (Rosenbek, 1989).

Hierarchy of skills for writing intervention: (Haskins, 1976)

- Say the sound a letter represents and have the person point to the correct printed letter.
- Name an alphabet and have the person point to the correct printed letter.
- Say a word and have the person point to the correct printed word.
- Have the person trace the printed letters of the alphabet.
- Have the person copy the printed letters.
- Have the person write letters and then words on dictation.
- Have the person copy sentences.
- Have the person write sentences to dictation.
- Design additional steps as necessary.

Successfulness of therapy increases if person with aphasia is involved as a motivated active participant, aiming towards goals that make sense in their real lives. Therapeutic activities need to have ‘face validity’ and be directed towards real-life goals (Hillis, 1998).

Reading and writing deficits can be addressed by focusing on word retrieval using semantic tasks or the tasks that involve the re-learning of spelling to sound correspondence rules (Kiran, Thompson, & Hashimoto, 2001).

Treatment items that are personally relevant have a higher probability of affecting everyday communication. It is also important for SLPs to promote any form of communication output for individuals with aphasia, whether it is oral, written or gestural.

Thus, keeping these above mentioned deficits and therapeutic guidelines as a base, the present manual is designed in Kannada to provide material for the SLPs and caregivers to improve reading, writing and arithmetic in persons with aphasia.

CHAPTER III

METHOD

Based on the documented principles and guidelines prescribed in the literature for treatment of persons with aphasia the present manual is designed. Considering the principles of aphasia management, illustrations regarding various activities are given in the manual. Literatures regarding reading and writing deficits in persons with aphasia and intervention strategies were reviewed from books, journals and internet sources. The collected information from these resources are compiled and organized.

The treatment parameters are formulated under the following headings:

- Reading
- Arithmetic
- Writing

Vocabulary and sentences used in everyday situation are chosen as training material. Pictures for the manual were drawn by a professional artist. The training material was tested for familiarity by five speech language pathologists (SLPs), who were native speakers of Kannada. The pictures and the word card/stimulus were also being tested for ambiguity. The SLPs were asked to comment on the appropriateness and hierarchy of the items used in the training material.

Development of the manual

The present manual comprises of three domains, which are taken based on the deficits seen in visual language system of persons with aphasia. The items include printed words and color pictures in A-4 sheets for visual cues wherever applicable. Clinician is free to present the stimuli in a word card/picture card while carrying out the activities. Stimuli ranging from 10-20 are included under each activity for all the sub-sections. For all the word card/stimulus,

English translation in Baraha (free, easy to use Kannada language software) format is given along with the stimuli list. The domains are as listed below where each domain is again sub-divided into levels, sections and sub-sections.

Reading: This domain aims at improving the reading skills in persons with aphasia. The domain is divided into three levels.

- Level I
- Level II
- Level III

Level I: This level aims at improving reading skills at functional level. This level consists of three sections which are further divided into several sub-sections as listed below.

A. Orientation to reading material

- a. Eye gaze on printed word
- b. Left to right progression
- c. Touch the word
- d. Follow oral directions
- e. Paragraph glancing

B. Recognition of signs/ logos

- a. Action verbs
- b. Daily logos

C. Recognition of alphabets

- a. Match the letter
- b. Make the letter
- c. Count the letter

Level II: Aim of this level is to develop reading skills at syllables and word level. This level is divided into two sections and further sub-divided into sub-sections as mentioned below. Activities under each sub-section are designed to improve word recognition and reading aloud abilities at syllable and word level.

A. Monosyllables

- a. Find the beginning sound
- b. Find the ending sound
- c. Rhyming words
- d. Find the syllable in given word

B. Words

Section 1:

- a. Word identification (Yes/no)
- b. Jumble/rearrange
- c. Word completion

Section 2:

- a. Plurals
- b. Tenses
- c. Synonyms
- d. Antonyms

Level III: This is an advanced level aiming at developing reading comprehension starting from sentences to discourse level. This level is divided into two sections which are further divided into several sub-sections.

A. Sentences

Section 1:

- a. Sentence verification
- b. Sentence completion
- c. Sentence sequencing

Section 2: Topographic/geographic orientation

B. Discourse level: Reading comprehension

Writing: This domain is designed to improve writing skills in persons with aphasia. The domain is divided into three levels.

- Level I
- Level II
- Level III

Level I: This level aims at improving writing skills in persons with aphasia at a functional level. The level is divided into three sections and further divided into sub-sections as mentioned below.

A. Pen/pencil grip

- a. Hand strengthening activities
- b. Finger strengthening activities
- c. Wrist stability activities
- d. Finger-dexterity activities
- e. Teach the pencil grasp

B. Eye-hand co-ordination

C. Writing/Signing his/ her name

Level II: This level consists of two aims. First is to improve readiness towards writing by targeting on improvement of visual-motor integration and the second aims at writing at word level by focusing more on letter legibility and alignment of letters.

Section 1: Writing readiness tasks

- A. Trace lines and letters
- B. Join the dots to form the letter
- C. Copy the letters
- D. Write from model

Section 2: Writing at word level

- A. Word completion task
- B. Write the word
- C. One minute task

Level III: This is more advanced level aiming at improving writing at sentence level and higher writing skills. The level contains following sections and further divided into sub-sections as mentioned below.

Section 1: Sentence level

- A. Sentence copying
- B. Sentence completion

C. Sentence verification

Section 2: Higher writing skills

A. Use punctuation

C. Write what's next

B. Make the question

D. Write about the topic

Arithmetic: Focus of this domain is to improve mathematical concepts in persons with aphasia and hence help him/her deal with simple arithmetic calculations required in day to day situations. This domain is divided into three levels.

- Level I

- Level III

- Level II

Level I (Functional calculation): This level focuses on teaching functional calculations. It includes two sections which are further divided into several sub-sections.

Section 1:

A. Identification of numbers

C. Concept of zero and counting

B. Identification of mathematical signs

Section 2:

A. Geometric shapes

C. Concept of currency of different

B. Concept of time

denomination

D. Concept of measurements

Level II (Advanced calculations): Aim of this level is to improve the arithmetic calculations in an advanced level in person with aphasia. This level is divided into following sections.

A. Addition

C. Multiplication

B. Subtraction

D. Division

Level III: This level is more advanced and aims at transferring of skills learnt in reading, writing and arithmetic in practical/daily life situations. This will help him/her communicate with ease in various daily life situations like travelling, managing bank accounts, shopping. Thus, he/she can be more independent citizen in society.

Under each sub-section the activities have been arranged in hierarchical order along with its stimulus and response mode hierarchy. At the beginning of each sub-section, scoring pattern and progress criteria have been provided. Overall progress criterion is also provided at the end of the manual.

CHAPTER IV

Manual for Treatment of Reading, Writing and Arithmetic for Persons with Adult Aphasia- In Kannada (MTR3A2-K)

About MTR3A2 –KANNADA

MTR3A2 –Kannada consists of mainly three domains:

Reading: This domain aims at improving reading skills in persons with aphasia. The domain contains three levels. This domain's focus is to improve both reading aloud and reading comprehension in functional as well as advanced levels. The activities under these levels are designed to improve reading at syllables, word, sentences and discourse.

Writing: The general aim of this domain is to help person with aphasia to write legibly and neatly, and to teach them to express their needs and ideas adequately through this modality. This domain contains three levels aiming to improve functional writing, writing readiness and writing at letters, words, and sentence and in discourse level. The activities also focus on improving penmanship/handwriting; improve syntax in writing, generation of ideas for writing.

Arithmetic: This domain aims to improve mathematical skills in persons with aphasia and thus help him in everyday activities including simple mathematics. This domain contains three levels to teach functional and advanced calculations. The sections and sub-sections contain activities to improve mathematical concepts, counting, concept of time and money concepts and its usage.

In all the domains, stimulus and response mode hierarchy, scoring and progression criteria's are mentioned for each sub-section. Picture and word card/stimulus/stimuli are provided for the activities of all sub-sections.

Treatment recording sheet: The treatment recording sheet (Adapted from: MAFAT-K) is provided in the manual (table 1. Refer page no.24). It is expected that the clinician follows these sheets to record the target activity, mode of presentation of the stimuli, mode of responses, target skills, number of trials and percentage of the correct responses. Clinician can give upto ten trials for a specific activity.

Points to Ponder (Adapted from: MANAT-H)

Creating a good communicative environment

- Communicate in a quiet, well lit and ventilated room.
- Limit the number of people, avoid large groups.
- Encourage the person with aphasia to communicate.
- Recognize and reinforce communication gains.
- Do not ask the person with aphasia to talk and do something else at the same time.
- Respect the privacy of the person with aphasia.
- Keep the person with aphasia informed about what is happening.
- Be aware of fatigue.
- Encourage the person with aphasia to be independent.
- Keep the person with aphasia occupied.
- Be sensitive to the person with aphasia as a person first, as an aphasic individual second.

As a speaker

- Talk slowly.
- Avoid rising your voice.
- Use appropriate language in the form of:
 - Short sentences
 - Simple sentences

- Familiar words
- Do not bombard the person with aphasia with too many questions.
- Stress the important words in sentences.
- Accompany a message with gestures or repeat if the person with aphasia does not understand.

As a listener

- Listen and do not interrupt.
- Be patient.
- Enough time should be given to the person with aphasia to respond.
- Accept language errors.

Strategies to use

1. **Thinking aloud:** Internal preoccupation can be brought down by thinking aloud while reading. The auditory feedback through thinking aloud will help enormously with planning, pace, sequencing, sustained attention and need for clarification.
2. **Adding sensory feedback to flashcards:** For some learners, it is easy to recall position in space. This link often leads to full memory of the item. Kinesthetic and auditory feedback will help improve memory.
3. **Touch the page:** Encourage the person with aphasia to touch the page while reading by underlining, highlighting. This tactile connection increases the sensory feedback and builds memory for the word. The reader can touch the page with a pen, end of a pencil, index card or even with their fingertips.
4. **Reading fluency:** After learning to read by decoding the printed word letter by letter, reading fluency should be focused by practicing reading poetry/ reading dialogue. Give permission to substitute an abbreviated nickname for long names.

5. **Black background:** For persons with aphasia having significant visual perceptual difficulties, letters in white against a black background is more beneficial format.
6. **Colour coding:** Colour code the key letters/words while reading a sentence. This will help as a cue for the presence of that specific letter/word and draw his/her attention on the word.
7. **Tachistoscope:** Tachistoscope is a fancy name for an unlined index card/sheet of paper with a cutout in the shape of a small window. The size of the window can be customized or open ended. When the window is placed on the problem/text being studied, it blocks out extraneous stimuli and increase attention on visual detail.
8. **Strikethrough:** For persons with aphasia who have fine motor issues, while self-correcting the writing mistakes, striking through is a better alternative for erasing. While saving time, it gives a picture of number and types of self-corrections.
9. **Repetition:** It is a repair strategy in which person with aphasia is encouraged to ask for the repetition of the presented stimuli when he/she does not comprehend.
10. **Rephrasing:** It is a repair strategy which either a clinician or a person with aphasia can use. In this strategy the complex stimuli is simplified or is broken down into several parts.
11. **Reducing the presentation of the rate of stimuli:** The clinician is expected to slow down the presentation of the stimulus in order to facilitate the comprehension ability of persons with aphasia.
12. **Reducing the rate of speaking:** This strategy can be used either by the clinician or by persons with aphasia where the rate of speaking is slowed down. This will improve the self monitoring and also intelligibility of speech.

It is expected that the clinician demonstrates, illustrates, instructs or adhere to these strategies for improving the overall communication skills. Further the clinician is also expected to provide appropriate model, realistic feedback and communication opportunities. These above mentioned strategies can be used either in isolation or in combination. Clinicians are free to add any other strategy which they feel will facilitate reading, writing and arithmetic.

Progression criterion list

- First, start with the functional level (level I) of reading, writing and arithmetic domains.
- Within each level of all domains, follow the criteria of 50% to move to next section and subsequent sub-sections within each level.
- Progression criteria for moving from level I to the level II, and level II to the level III in each domain is 75%.
- Overall, the person with aphasia must score at least 75% in all the domains in order to further improve the reading, writing and arithmetic skills.

**Contents of Manual for Treatment of Reading, Writing and Arithmetic for Persons
with Adult Aphasia- In Kannada (MTR3A2-K)**

Reading

Level I:

A. Orientation to reading material

- | | |
|------------------------------|---------------------------|
| a. Eye gaze on printed word | d. Follow oral directions |
| b. Left to right progression | e. Paragraph glancing |
| c. Touch the word | |

B. Recognition of signs/ logos

- | | |
|-----------------|----------------|
| a. Action verbs | b. Daily logos |
|-----------------|----------------|

C. Recognition of alphabets

- | | |
|---------------------|---------------------|
| a. Match the letter | c. Count the letter |
| b. Make the letter | |

Level II:

A. Monosyllables

- | | |
|-----------------------------|------------------------------------|
| a. Find the beginning sound | c. Rhyming words |
| b. Find the ending sound | d. Find the syllable in given word |

B. Words

Section 1:

- | | |
|---------------------------------|--------------------|
| a. Word identification (Yes/no) | c. Word completion |
| b. Jumble/rearrange | |

Section 2:

- | | |
|------------|-------------|
| a. Plurals | c. Synonyms |
| b. Tenses | d. Antonyms |

Level III:

A. Part 1:

- a. Sentence completion
- b. Sentence verification
- c. Sentence sequencing

Part 2: Topographic/geographic orientation

B. Discourse level: Reading comprehension

Writing

Level I

A. Pen/pencil grip

- a. Hand strengthening activities
- b. Finger strengthening activities
- c. Wrist stability activities
- d. Finger-dexterity activities
- e. Teach the pencil grasp

B. Eye-hand co-ordination

C. Writing/Signing his/ her name

Level II

Section 1: Writing readiness tasks

- A. Trace lines and letters
- B. Join the dots to form the letter
- C. Copy lines and letters
- D. Write from model

Section 2: Writing at word level

- A. Word completion task
- B. Write the word
- C. One minute task

Level III

Section 1: Sentence level

- A. Sentence copying
- B. Sentence completion
- C. Sentence verification

Section 2: Higher writing skills

- A. Use punctuation
- B. Make the question
- C. Write what's next
- D. Write about the topic

Arithmetic

Level I: (Functional calculation)

Section 1:

- A. Identification of numbers
- B. Identification of mathematical signs
- C. Concept of zero and counting

Section 2:

- A. Geometric shapes
- B. Concept of time
- C. Concept of currency of different denomination
- D. Concept of measurements

Level II: Advanced calculations

- A. Addition
- B. Subtraction
- C. Multiplication
- D. Division

Level III

Transferring of skills learnt in reading writing and calculations in practical/daily life situations.

Treatment record sheet: guidelines to use:

It is recommended to use the treatment recording sheets for recording the responses of person with aphasia for the tasks under each domain/sub-section as shown in table 1 (refer page no 24). The clinician is expected to follow these sheets in which he/she should record the mode of presentation of the stimuli, mode of responses, target skills, number of trials and percentage of the correct responses.

First, mention the activity of section/sub-section and the item number in first two columns. Mention the stimulus mode [e.g., grapheme + auditory + gestural (G+A+G) or grapheme (G) alone] in the third column. Note down the response modality used by the person with aphasia for the given stimulus in the fourth column. In the fifth column mention the target response. Carry out upto ten trials until the person with aphasia exhibits desired response and score it under each trial column given in the score sheet. Finally note down the percentage of the responses. A minimum of 50% correct score should be obtained in order to pass this activity.

Scoring: The purpose of scoring the responses here is to provide objectivity to the tasks. This also provides feedback to the person with aphasia regarding his performance.

For all the activities score '2' (two) if a complete correct intelligible response is present. Score of '1' (one) will be given for a partially correct/ intelligible response. Score '0' (zero) will be given for incorrect/unintelligible response and no response.

Scoring pattern can be made more flexible by the clinician according to the individual's performance.

For e.g., if the response of an individual is between no response and partially correct/intelligible response, clinician can introduce scoring $\frac{1}{2}$ (half) for such responses. A score of $1\frac{1}{2}$ (one & half) can be given if the response is between partially intelligible and fully correct intelligible response.

Note: Before starting with the stimulus set given for each activity, clinician is instructed to give at least two practice items. These practice items will familiarise the person with aphasia for a given task.

READING

LEVEL I: FUNCTIONAL READING

This level contains following sections:

- A. Orientation to reading material
- B. Recognition of signs and logos
- C. Recognition of alphabets

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

➤ **Pictures for this level are shown in Appendix 1**

General guidelines to carry out these activities:

- Hold/Place the reading material at appropriate distance from person with aphasia.
- Place the reading material in the vicinity of the visual field of the person with aphasia.
- Start with font size of 32. Present the words in bold font using primary colours (red, green and blue).
- Font size can be increased based on visual difficulty.
- Background colour can be changed to black with persons with more visual problems.
- Follow the stimulus and response mode hierarchy.
- Reduce distractions
- Develop interest in activity by making him look at his name in post letters, personal documents, and hospital reports.
- Make sure the person with aphasia is not giving fleeting responses. The eye gaze on the printed word should be for adequate duration.
- Clinician should demonstrate each activity by giving enough time for the person with aphasia to observe and understand the activity.

A. Orientation to reading material

This section is divided into following sub-sections.

- a. Eye gaze on printed word
- b. Left to right progression
- c. Touch the word
- d. Follow oral directions
- e. Paragraph glancing

Stimulus hierarchy:

- Combination of grapheme, auditory and gestural (G+A+G)
- Combination of grapheme and auditory/gesture(G+A/G)
- Grapheme (G)

Response hierarchy:

- Eye gaze/eye movement (EG/EM)
- Pointing/gesture (P/G)

Note: Pictures are not required for this section. However, wordcard/stimuli are provided for this section wherever applicable.

a. Eye gaze on printed word

Level 1: Clinician models the person with aphasia to look at the card/stimulus and reading it aloud.

e.g.,  bOrayya

Level 2: By keeping the word card/stimuli/stimulus on the desk, ask the person with aphasia to look at the word.

e.g., E°è £ÉÆÃr illi nODi

Level 3: Keep the word card/stimuli on the desk. Person with aphasia is expected to look at the card without being asked for.

Stimuli: The stimuli for this section includes name cards of person with aphasia, his family members' name, friends' name and profession related words.

Following is an example illustrating a person with aphasia, who is a teacher by profession.

I.

1	Name	·ÉÆÃgÀAiÀÄå	bOrayya
.			
2	Spouse name	,ÀgÉÆÃd	sarOja
.			
3	Daughter/son's name	eÉÆåÃw/ fÃªÀfi	jyOti/ jIvan
.			
4	Sister/brother's name	AiÀÄ±ÉÆÃzsÀ/§,ÀªÀgÁdÄ	yashOdha/basavarAju
.			
5	Friend's names	AiÀÄ®è¥Àà/ZÀAzÀæ±ÉÃR gĩ	yallappa/caMdrashEK ar

II. Teaching Profession relevant words

1.	¥ÀÄ,ÀÛPÀ	Pustaka
2.	±Á-É	Shale
3.	PÉÆoÀr	koThaDi
4.	©¹AiÀÄÆI	bisiyUTa
5.	±Á-ÁªÀÀ£À	shAlA vAhana
6.	,À°À²PÀëQ	sahashikShaki
7.	©. E. M D'üÃ,ÀÄ	bi. i. o AphIsu
8.	ªÀÄÄSÉÆåÃ¥Ázs	muKYOpAdhyAyaru

9. ÁâAiÀÄgÀÄ
 ,ÀPÁđj sarkAri noukarara saMgha
 £ËPÀgÀgÀ
 ,ÀAWÀ
10. ²PÀëPÀgÀ shikShakara tarabEti kEMdra
 vÀgÀ¨ÉÃw
 PÉÃAzÀæ

b. Left to right progression

This sub-section aims to develop the readiness towards reading.

Level 1: Ask the person with aphasia to look at the word while clinician slides a blank card on top of the word slowly from left to right direction.

Level 2: Keep the word card/stimuli on the table. Ask the person with aphasia to look at the word from left to right direction.



Stimuli:

- | | | | |
|---------|-------|---------------|-----------|
| 1. §αβ | Banni | 11. ¨ÁV®Ä | bAgilu |
| 2. K£ÄÄ | Enu | 12. D,ÀàvÉæ | Aspatre |
| 3. HI | UTa | 13. ªÄzÁâ°Àβ | madyAhna |
| 4. gÀeÉ | Raje | 14. PÀ£ÀβqÀPÀ | kannaDaka |

5. ^a ÀiÁvÉæ	mAtre	15. vÀ ⁻ ÉçA§Ä	talediMbu
6. æzÉæ	Nidre	16. £À ^a ÀÄ,ÁÌgÀ	namaskAra
7. E®è	Illa	17. ,ÁAiÀÄAPÁ®	sAyaMkAla
8. °É,ÀgÀÄ	Hesaru	18. ç£À¥ÀwæPÉ	dinapatrike
9. CAUÀr	aMgaDi	19. §,ï æ ⁻ ÁÝt	bas nildANa
10. ¨ÁåAPi	byAMk	20. «ÄÄ£ÀÄ ^a ÀiÁgÁl PÉÄAzÀæ	mInumZArATa kEMdra

c. Touch the word:

This sub-section aims to increase the sensory feedback to the person with aphasia.

Level 1: Model the person with aphasia to touch the word and move index finger below the word in reading fashion.

Level 2: Ask the person with aphasia to touch the word and move index finger below the word in reading fashion.

Stimuli: Same as that for eye gaze on printed word and left to right progression activities.

d. Follow oral instructions

Task: The clinician will ask the person with aphasia to follow the instructions given with reference to visual stimuli (materials required word card/book, blank pages, cover, stapler, gum and stamp).

Level 1: One-step command

1. F PÁqið £ÉÆÄr
I kaarD nODi
2. F ¥É£Àß£ÀÄß^aÀÄÄnÖ

I pennannu muTTi

3. ¥ÀÄ, ÀÛPÀ^aÀ£ÀÄß vÉgÉ¬Äj
pustakavannu tereyiri
4. ¥ÀÄ, ÀÛPÀ^aÀ£ÀÄß^aÀÄÄaÑj
pustakavannu mucciri
5. °Á¼ÉAiÀÄ£ÀÄß wgÄÄV¹
hALeyannu tirugisi
6. PÉÆ£ÉAiÀÄ ¥ÀÄI^aÀ£Àß £ÉÆÄr
koneya puTavanna nODi
7. »Aç£À ¥ÀÄI^aÀ£Àß £ÉÆÄr
hiMdina puTavanna nODi
8. °Á¼ÉUÀ¼À£ÀÄß MnÖUÉ^aÀÄra
hALegaLannu oTTige maDici
9. F ¥ÀzÀzÀ PÉ¼ÀUÉ UÉgÉ J¼É¬Äj
I padada keLage gere eLeyiri
10. F PÀ^aÀgÀ£ÀÄß vÉgÉ¬Äj
I kavarannu tereyiri

Level 2: two-step command

1. F ¥É£Àß£ÀÄß PÁrð£À^aÉÄÄ⁻É Er
I pennannu kArDina mEle iDi
2. §®UÀqÉ EgÄÄ^aÀ PÁqÀð£ÀÄß^aÀÄÄnÖ vÉÆÄj¹
balagaDe iruva kArDannu muTTi tOrisi
3. ^aÉÄÄ[°]£À[,] Á[°]£À^è §® vÄÄçAiÀÄ£Àß £ÉÆÄr
mElina sAlinalli bala tudiyanna nODi
4. PÉ¼ÀV£À[,] Á[°]£À^è JqÀUÀqÉ £ÉÆÄr
keLagina sAlinalli eDagaDe nODi

5. F °Á¼ÉAiÀÄ£ÀÄß JgÀqÀÄ ,Áj °ÄÄra
I hALeyannu eraDu sAri maDici
6. F °Á¼ÉAiÀÄ£ÀÄß PÀvÀÛj¹ JgÀqÀÄ ¨sÁUÀ °ÀiÁr
I hALeyannu kattarisi eraDu BAga mADi
7. F °Á¼ÉAiÀÄ£ÀÄß °ÄÄra PÀ°Àgì M¼ÀUÉ Er
I hALeyannu maDici kavarr oLage iDi
8. F ,ÁÖ÷âAÿÀ£ÀÄß PÀ°Àgì °ÉÄÃ -É CAn¹
I sTYAMpannu kavarr mEle aMTisi
9. F JgÀqÀÄ ,ÁÖ÷âAÿiUÀ¼À£ÀÄß PÀ°Àgì °ÉÄÃ -É CAn¹
I eraDu sTYAMp gaLannu kavarr mEle aMTisi
10. F °Á¼ÉUÀ¼À£ÀÄß MnÖUÉ ,ÉÃj¹ !ÿi °ÀiÁr PÀ°Àgì M¼ÀUÉ
Er
I hALegaLannu oTTige sErisi pin mADi kavarr oLage iDi

e. **Paragraph glancing**

Level 1: This passage contains sentences aligned in lines and the last word of the sentence and beginning word of next sentence is colour coded.

Task: Ask the person with aphasia to look at the passage and follow as clinician reads the passage aloud.

Stimuli: (This paragraph is adapted from RAP-K)

**MAzÁ£ÉÆAzÀÄ PÁ®zÀ°è MAzÀÄ Hj£À°è M§â¼ÀÄ
°ÉAUÀ,ÀÄ EzÀÝ¼ÀÄ.**

oMdAnoMdu kAladalli oMdu Urinalli obbaLu heMgasu iddaLu.

C^aÀ½UÉÆŞâ^aÀÄUÀ EzÀÝ£ÄÄ.

avaLigobba maga iddanu.

**C^aÀ£ÄÄ MAzÄÄ ç£Ä ±Á⁻É-ÄAzÀ ¥ÄÄ,ÀÛPÀ MAzÀ£ÄÄß
PÀzÄÄÝ vÀAzÀ£ÄÄ.**

avanu oMdu dina shaaleyiMda pustaka oMdannu kaddu taMdanu.

**vÁ-Ä C^aÀ£Ä£ÄÄß "ÉÊAiÄÄÄâ^aÀ §zÀ®Ä "M¼ÉiAiÄÄ PÉ®,À
^aÀiÁrzÉ^aÀÄUÀ£É" JAzÄÄ °ÉÆUÀ½zÄ¼ÄÄ.** tAyi avanannu baiyyuva
badalu "oLLEYa kelasa mADide magane" eMdu hogaLidaLu.

**EzÄjAzÄ D °ÄÄqÄÄUÄçUÉ PÄ¼ÄîvÄ£Ä^aÀiÁqÄÄ^aÀÅzÉÃ
M¼ÉiAiÄÄzÉÃ£ÉÆÄ Jç¹vÄÄ.**

idariMda A huDuganige kaLLatana mADuvudE oLLEYadEnO enisitu.

**CAççAzÄ C^aÀ£ÄÄ ,ÀtÚ ¥ÄÄiÖ PÄ¼ÄîvÄ£ÄUÄ¼Ä£ÄÄß
^aÀiÁqÄvÉÆqÄVzÄ£ÄÄ.**

aMdiniMda avanu saNNa puTTa kaLLatanagaLannu mADatoDagidanu.

Level 2: This paragraph has sentences in continuation without colour coding. Ask the person with aphasia to read the following passage.

Stimuli:

**EzÄÄ ,ÉÆÄ^aÀÄ£Ä°Ä½îAiÄÄ d£ÄjVgÄÄ^aÀ MAzÉÃ MAzÄÄ
CAUÀr. CAUÀrAiÄÄ°è §UÉ§UÉAiÄÄ.**

idu sOmanahaLLiya janarigiruva oMdE oMdu aMgaDi. aMgaDiyalli bagebageya

ÁÀiÁ£ÄÄUÀ½^aÉ^aÁâŸÁgÀPÁÌV vÀPÀÌr vÀÆPÀzÀ

ÉÆIÄÖUÀ¼ÄÄ ÀeÁÓV ɁAw^aÉ. E^oè gÀAUÀtÚ

sAmAnugaLive.vyApArakkAgi takkaDi tUkada boTTugaLu sajjAgi niMtive. illi raMgaNna

CAUÀrAiÄÄ^aÀiÁ^oÃPÀ. E^aÀ£ÄÄ vÀgÀPÁjUÀ¼ÄÄ£ÄÄß PÉ.f.

-ÉPÀÌzÀ^oè PÉÆqÄÄvÁÛ£É^aÄÄvÄÄÛ^oÁ®Ä,

aMgaDiya mAllka. ivanu tarakArigaLannu ke.ji. lekkadalli koDuttAne mattu hAlu,

JuÉÚAiÄÄAxÀ Á^aÀiÁ£ÄÄUÀ¼ÄÄ£ÄÄß^oÃlj£Ä^oè

C¼ÉAiÄÄÄvÁÛ£É.

eNNeyaMtha sAmAnugaLannu lITarinalli aLeyuttAne.

Note: These passages are given in the manual. However, clinician is free to use bigger font size if necessary.

B. Recognition of signs/ logos

This section is divided into following sub-sections.

a. Action verbs

b. Daily logo

Stimulus hierarchy:

- Combination auditory and visual (A+V)
- Visual (V)

Response hierarchy:

- Pointing/gesture (P/G)

a. **Action verbs**

Pictures are provided at the end of reading level-I.

Level 1: Show the pictures of different action verb along with the word card/stimulus.

Person with aphasia is expected to point to the stimuli named by clinician.

e.g.: E^aÀÄUÀ¼À°è °ÀÄqÀÄUÀ w£ÀÄßwÛgÀÄ^aÀ avÀæ vÉÆÃj¹

ivugaLalli huDuga tinnuttiruva citra tOrisi

Level 2: Ask the person with aphasia to perform/act out an action to the action verb.

e.g.: E°ègÀÄ^aÀAvÉ^aÀiÁr vÉÆÃj¹
illiruvaMte mADi tOrisi

Stimuli:

1	w£ÀÄß ^a ÀÄzÀÄ	tinnuvudu	6.	NzÀÄ ^a ÀÄzÀÄ	Oduvudu
2	PÀÄrAiÀÄÄ ^a ÀÄzÀÄ	kuDiyuvudu	7.	£ÀqÉAiÀÄÄ ^a ÀÄzÀÄ	naDeyuvudu
3	^a ÀÄ®UÀÄ ^a ÀÄzÀÄ	Malaguvudu	8.	PÀÆgÀÄ ^a ÀÄzÀÄ	kUruvudu
4	Áß£À	snAna	9.	£ÀUÀÄ ^a ÀÄzÀÄ	naguvudu
5	^a ÀiÁqÀÄ ^a ÀÄzÀÄ	mADuvudu	10	C¼ÀÄ ^a ÀÄzÀÄ	aLuvudu
	§gÉAiÀÄÄ ^a ÀÄzÀÄ	Bareyuvudu			

Note: Pictures are provided for this activity.

b. **Daily logos**

Level 1: Show the pictures of different logos along with the word card/ stimulus and the

person with aphasia is expected to point to the picture named by clinician.

Level 2: Say the usage of a logo and ask the person with aphasia to point to the logo and the word card/stimulus.

Stimuli:

- | | | |
|----|----------------|-----------------|
| 1. | mÁæ üPĩ a£Éí | TrAphik cinhe |
| 2. | OµÀçü CAUÀr | auShadhi aMgaDi |
| 3. | PÀ,ÀzÀ §ÄnÖ | kasada buTTi |
| 4. | C¥ÁAiÀÄ a°Éß | apAya cihne |
| 5. | J,ĩ. n. r §Ævi | es. Ti. Di bUt |
| 6. | CAZÉ ¥ÉnÖUÉ | aMce peTTige |
| 7. | §,ĩ ¤-ÁÝt | bas nildANa |
| 8. | J.n. JªÀiï | e.Ti.em |

Note: Pictures are provided for this activity.

C. Recognition of alphabets

This section contains following sub-sections:

- | | |
|---------------------|---------------------|
| a. Match the letter | c. Count the letter |
| b. Make the letter | |

Stimulus hierarchy:

- Combination of grapheme and auditory(G+A)
- Grapheme alone (G)

Response hierarchy:

- Pointing/gesture (P/G)
- Verbal (V)

- a. **Match the letter**

I. Grapheme to grapheme match

Task: Four letter card/stimulus/stimuli will be kept on the table. Clinician will have one letter card/stimulus in his/her hand facing towards person with aphasia and reads it aloud. Person with aphasia will be asked to point to the same letter as mentioned by the clinician out of the given choices.

II. Grapheme to sound match

Level 1: Present the letter card/stimulus while naming it aloud. Ask the person with aphasia to indicate yes for correct grapheme to sound match and no for incorrect grapheme to sound match.

Level 2: Present the letter card/stimulus. Ask the person with aphasia to name the letter.

Stimuli: For I and II use stimuli set A and B (mentioned below)

Set A. Orthographically dissimilar letters

- | | | | |
|------------|--------------------|-----------|-------|
| 1. F I | M o | 6. ±À sha | ® la |
| 2. UÀ ga | ZÀ ca | 7. °À ha | K E |
| 3. AiÀÄ ya | zÀ da | 8. ¥À pa | t Na |
| 4. £À na | E i | 9. zÀ da | ,À sa |
| 5. PÀ ka | ^a ÀÄ ma | 10. vÀ ta | UÀ ga |

Set B: Orthographically similar letters

- | | | | |
|----------|-------|----------------------|----------|
| 1. C a | D A | 6. gÀ ra | oÀ Tha |
| 2. O au | d ja | 7. ^a À va | ¥À pa |
| 3. vÀ ta | PÀ ka | 8. AiÀÄ ya | gÀhÄ jha |
| 4. zÀ da | qÀ Da | 9. l Ta | t Na |
| 5. £À na | ,À sa | 10. ¥sÀ pha | xÀ tha |

Note: Not all the letters are included in this activity. However clinician is free to add other letters of ‘varnamaala’ after the attainment of target response level.

b. Make the letter

This section has two sets of letter card/stimulus and these letters are in parts. Shapes A contains upper parts of letters and shapes B contains lower parts as given in Appendix 1. The task is to make the letter with the given choices of letter parts.

Level 1: Keep the model letter on the table and read it aloud. Give the parts of the letter and ask the person with aphasia to make the letter by joining the parts of the letter.

Level 2: Give two parts of the letter along with one foil part. Ask the person with aphasia to make the letter and read it aloud.

Stimuli:

- | | | | |
|-------------------|-----|---------|-----|
| 1. gÀ | ra | 9. ¥sÀ | pha |
| 2. zÀ | da | 10. D | ja |
| 3. zsÀ | dha | 11. ¨sÀ | bha |
| 4. ^a À | va | 12. PÀ | ka |
| 5. § | ba | 13. ,À | sa |
| 7. £À | na | 15. UÀ | ga |
| 8. ¥À | pa | | |

Note: Letters which are having more common orthographic structures are included in this section. It is up to clinician's flexibility to teach the remaining letters also through this activity. The letter parts for above mentioned letters are given in the manual.

c. Count the letter

Level 1: Give the sentence card to person with aphasia and ask him to point/underline the letter throughout the sentence which the clinician names.

e.g: F^aÁPÀåzÀ°è 'PÀ' CPÀëgÀ EgÀÄ^aÀ-Éè®è CrUÉgÉ J¼É¬Äj

I vAkyadalli 'ka' akShara iruvalllella aDigere eLeyiri

Level 2: Ask the person with aphasia read aloud the letter and count the number of times it is occurring in the sentence.

e.g: F^aÁPÀázÀ°è 'PÀ' CPÀègÀ^aÀ£ÀÄß eÉÆÃgÁV NzÀÄvÁÛ
-ÉPÀÌ^aÀiÁr

I vAkyadalli 'ka' akSharavannu jOrAgi OduttA lekka mADi

Stimuli:

1. E EzÀÄ E°
i idu ili
2. § ¨Á §¼À¥ÀzÀ°è §gÉ.
ba bA baLapadalli bare.
3. PÀ PÀ«vÁ¼À PÀ£ÀßqÀPÀ PÀ¥ÀÄà
ka kavitALa kannaDaka kappu
4. °À D°Á! °À, ÀÄ«£À °Á®Ä
ha AhA! hasuvina hAlu
5. £À £ÀjAiÀÄ£ÀÄß £ÉÆÃr £À«®Ä £ÀQÌvÀÄ
na nariyannu nODi navilu nakkitu
6. ¥Á ¥Á^aÀ£À ¥Á¥ÀÄ«UÉ ¥ÁoÀ °ÉÃ¼ÀÄvÁÛ¼É
pa pAvana pApuvige pATha hELuttALe
7. ^aÄÄ ^aÀiÁ£À, À ^aÄÄ¼ÉAiÀÄ°è £É£ÉzÀÄ ^aÄÄ£ÉUÉ
§AzÀ¼ÄÄ
ma mAnasa maLeyalli nenedu manege baMdaLu
8. D D±À ^aÄÄvÀÄÛ DAIÀÄð D^aÉÄÃ-É DI DqÀ®Ä
°ÉÆÃzÀgÀÄ
A Asha mattu Arya AmEle ATa ADalu hOdaru

19. ±À ±ÀA¨sÀÄ ºÀÄvÀÄÛ ±Áj C±ÉÆÃPÀ£À
 CmÉÆÃjPÁëzÀ ºè ±Á-ÉUÉ ºÉÆÃzÀgÀÄ.
 sha shaMBu mattu SAri ashOkana aTOrikShAdalli SAlege hOdaru.

20. R gÉÃSÁ ,ÀRvi SÁgÀ CAvÀ ºÉÃ¼ÁÛ£ÉÃ J-Áè SÁº
 ºÀiÁrzÀ¼ÀÄ.
 Ka rEKA saKat KAra aMta hELtAnE eLLA KAli mADidaLu.

Note: These sentences have been included in the manual. The clinician is free to use bigger font size if necessary.

READING: LEVEL II

This level is divided into following sections:

A. Monosyllables

- | | |
|-----------------------------|------------------------------------|
| a. Find the beginning sound | c. Rhyming words |
| b. Find the ending sound | d. Find the syllable in given word |

B. Words

Section 1:

- | | |
|---------------------------------|--------------------|
| a. Word identification (Yes/no) | c. Word completion |
| b. Jumble/rearrange | |

Section 2:

- | | |
|------------|-------------|
| a. Plurals | c. Antonyms |
| b. Tenses | d. Synonyms |

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

➤ **Pictures for this level are shown in Appendix 2**

Stimulus mode hierarchy:

- Combination of auditory, visual and graphic (A+V+G)
- Combination of auditory and graphic (A+G)
- Graphic (A)

Response mode hierarchy

- Pointing (P)
- Combination of pointing and verbal (P+V)
- Verbal (V)

A. Monosyllables:

a. Find the beginning sound

Level 1: This level consists of 10 stimuli. Each stimulus has a set of three words cards along with pictures. The clinician is expected to have one card along with its picture in his/her hand. Other two word card/stimulus with pictures will be kept on the table facing the person with aphasia.

Task: Read the card aloud. Ask the person with aphasia to point to the picture which has same sound in the beginning position.

e.g.: E^a Ä Å U Ä ¼ Ä ° è 'a Ä' ç Az Ä ± Ä Ä g Ä Ä ^a Á U Ä Ä ^a Ä av Ä æ v É Æ Ñ j¹.

ivugaLalli 'ma' diMda shuruvAguva citra tOrisi.

Stimuli:

1.	^a ÀÄgÀ	Mara	^a ÀÄ£É	E°	Mane	Ili
2.	D£É	Ane	DUÀ,À	£É®	Agasa	Nela
3.	Q«	Kivi	« ^a ÀiÁ£À	QIQ	kiTaki	vimAna
4.	PÉÆÃ½	kOLi	N-É	PÉÆÃÄ	kOTu	Ole
5.	VqÀÄUÀ	giDuga	PÉÆqÀ°	VqÀ	giDa	koDali
6.	«ÄÃ£ÄÄ	mInu	«ÄÃ,É	C½®Ä	mIse	aLilu
7.	·Á«	bAvi	·ÁV®Ä	VtÂ	bAgilu	giNi
8.	±Á-É	Shale	§®Æ£ÄÄ	±ÀAR	balUnu	SaMKa
9.	PÉÆPÀìgÉ	Kokkare	ZÀ¥Àà°	PÉÆqÉ	cappali	koDe
10.	mÉÆ!à	Toppi	mÉÆAUÉ	^a ÀÄAZÀ	ToMge	maMca

Note: Pictures are provided for this activity.

Level 2: This level consists of 10 stimuli. Each stimulus has a set of three words cards. The clinician is expected to have one card in his/her hand. Other two word card/stimulus will be kept on the table facing the person with aphasia.

Task: Read the card aloud. Ask the person with aphasia to point to the word card/stimuli on the table which has same sound in the beginning position.

e.g.: E^aÀÄUÀ¼À°è 'D' çAzÀ ±ÀÄgÀÄ DUÉÆ ¥ÀzÀ vÉÆÃj¹.

ivugaLalli 'A' diMda shuru Ago pada tOrisi.

Level 3: Keep the card on the table. Ask the person with aphasia to read the syllable.

Stimuli: For both level 2 and 3.

1	£ÉÆÃªÀÅ	nOvu	£ÉÆÃIÄ	£À«®Ä	nOTu	navilu
.						
2	ÁUÀgÀ	sAgara	ÁjUÉ	ÀÄAzÀg	sArige	suMda ra
.				À		
3	°ÉÆÃ½UÉ	hOLige	°ÉÆÃ§½	°À¹gÀÄ	hObaLi	hasiru
.						
4	PÉÊ	Kai	CAUÁ®	PÉÊ-Á,À	aMgAlu	kailAs a
.			Ä			
5	©Ã,ÀtÂUÉ	bIsaNige	©ÃgÀÄ	©¹®Ä	bIru	bisilu
.						
6	ªÉÆÃ,ÀUÁgÀ	mOsagAra	ªÉÆÃ°À£	«ÄÃ£ÀÄ	mOhanA	mInug Ara
.			ÁQë	UÁgÀ	kShi	
7	¥À±ÀÄ¥ÀQëU	pashupakSh igaLu	¥ÀgÀªÀi	C¥ÀdAiÀ	paramaat ma	apajay a
.	À¼ÀÄ		ÁvÀä	Ä		
8	¥ÀæPÀÈw	prakRuti	¥Àæ±ÀA	ÉÆàÃIP	prashaM	spOTa ka
.			É	À	se	
9	±ÉÊPÀëtÂPÀ	shaikShaNi ka	±ÉÊªÀ	ªÀA±À	Shaiva	vaMsh a
.						
10	ªÁªªÉÆÃ°À	vyAmOha	ªÁª¥ÁgÀ	ªÀiÁUÀð	vyApAra	mArga

b. Find the ending sound

Level 1: This level consists of 10 stimuli. Each stimulus has a set of three words cards along with pictures. The clinician is expected to have one card along with its picture in his hand.

Other two word card/stimulus with pictures will be kept on the table.

Task: Read the card aloud. Ask the person with aphasia to point to the picture which has same sound in the ending position.

Stimuli:

1.	PÀªÀÄ®	Kamala	ªÉÆ®	«ÃuÉ	mola	vINe
2.	°ÀÆf	hUji	ÁÆf	PÉÆÃ½	sUji	kOLi
3.	DgÀÄ	Aru	PÁgÀÄ	ZÉAqÀ	kAru	ceMDu

Ä

4.	PÀtÄÚ	kaNNu	°ÀtÄÚ	^a ÉÆ¼É	mole	Mole
5.	MAmÉ	oMTe	UÀAmÉ	vÀPÀÏr	gaOTe	takkaDi
6.	^a ÄÄrPÉ	maDike	··ÁZÀtÂU É	£À°è	bAcaNig e	Nalli
7.	PÉÆ¼À® Ä	koLalu	°Á®Ä	^a ÄÄAIÿ Ä	hAlu	maMTap a
8.	^a ÄÄgÀ¼Ä Ä	maralu	£ÉgÀ¼Ä Ä	°ÀA,Ä	neralu	haMsa
9.	zÁ,Ä ^a Á¼Ä	dAsavAL a	¥Á ^a Á¼Ä	fAPÉ	pArivAL a	jiMke
10	agÀvÉ	cirate	°ÀtvÉ	°Á ^a ÄÄ	haNate	hAvu

Note: Pictures are provided for this activity.

Level 2: This level consists of 10 stimuli. Each stimulus has a set of three words cards. The clinician is expected to have one card in his hand. Other two word card/stimulus will be kept on the table.

Task: Read the card aloud. Ask the person with aphasia to point to the word card/stimuli on the table which has same sound in the ending position.

Level 3: Keep the card on the table. Ask the person with aphasia to read the ending syllable.

Stimuli:

1.	P ^a Ää	kAvya	P ^a Ä£Ä	kavana	··s ^a Ää	Bavya
2.	«ÄgÀ··Á°À Ä	vIrabAhu	§°ÄÄgÀ Æ!	bahurUpi	,ÄÄ¼ÄÄ° ÄÄ	suLuhu
3.	PÀgÄÄ£Á qÄÄ	karunADu	zÄ£ÀPÀg ÄÄ	danakaru	zÄlÖPÁq ÄÄ	daTTakADu
4.	§AdgÄÄ··s	baMjaruBUmi	··sÄÆ«Äv	BUmitAyi	gÄxÄ,Äÿ	rathasaptami

	ÀÆ«Ä		Á¬Ä		ÀÛ«Ä	
5.	C±Àé ^a ÉÄ	ashvamEdha	^a ÉÄÃÆZS	mEdhAVvi	°AUÀ [·] sÉÃ	liMgaBEDha
	ÃzsÀ		Á«		zsÀ	
6.	À ^a ÄÄzÀ	Samudra	PÀvÀÛ®	kattalu	¥ÀÆtðZÀ	pUrNacaMdra
	æ		Ä		AzÀæ	
7.	À ^a ÀiÁ£À	sAmAnugaLu	CQI ^a ÄÄ	akkimUTe	PÀrØUÀ¼	kaDDigaLu
	ÄUÀ¼ÄÄ		ÆmÉ		ÄÄ	
8.	ZÀIÄ ^a ÀnP	caTuvaTike	·É¼ÀçA	beLadiMgaLu	°ÉÆÄ°PÉ	hOlike
	É		UÀ¼ÄÄ			
9.	zÀÆgÀzÀ	dUradarshana	¥ÀæzÀ±	pradarshana	¥ÀæzÀQë	pradakShiNe
	±Àð£À		Àð£À		uÉ	
10.	G à£ÀPÁ¬	uppinakAyi	SÁ¬Ä ⁻ É	KAyile	zÉÆqÀØ [·]	doDDabAyi
	Ä				Á¬Ä	

c. Rhyming words

Level 1: Read the word pair along with keeping the word card/stimulus on the table. Ask the person with aphasia to say if they sound alike or not.

Level 2: Give different word card/stimulus and ask the person with aphasia to group them to sounding alike.

Stimuli:

- | | | |
|----|-----------------------------------|-------------|
| 1. | £Á¬Ä PÁ¬Ä | nAyi kAyi |
| 2. | °Á®Ä PÁ®Ä | hAlu kAlu |
| 3. | vÀmÉÖ §mÉÖ | taTTe baTTe |
| 4. | ¥É£ÄÄß ·É£ÄÄß | pennu bennu |
| 5. | HI DI | UTa ATa |
| 6. | J ⁻ É § ⁻ É | ele bale |
| 7. | ·ÉÃgÄÄ vÉÃgÄÄ | bEru tEru |
| 8. | ^a ÄÄÆgÄÄ DgÄÄ | mUru Aru |
| 9. | °À®Äè PÀ®Äè | hallu kallu |

Note: Pictures are not provided for this activity.

d. Find the syllable in given word

Level 1: Keep the three word card/stimulus on the table and read them aloud. Ask the person with aphasia to underline the common syllable which is present in all the cards.

Level 2: Give all three word card/stimulus. Ask the person with aphasia to find the syllable which is present in all the cards and name it aloud.

Stimuli:

1. UÀrAiÀiÁgÀ ªÀÄÈzÀAUÀ ,ÁgÀAUÀ
gaDiyAra mRRudaMga sAraMga
2. ¨É½îZÀÄQÌ aQÌ° ¨É¼ÀîQÌ
beLLicukki cikkili beLLakki
3. EnÖUÉ PÀnÖUÉ ªÉÄnÖ®Ä
iTtTige kaTTige meTTilu
4. JA¨sÀvÉÛÃ¼ÄÄ PÁ¼ÄÄPÀrØ °ÀgÀ¼ÄÄ
eMBattELu kaLUkaDDi haraLu
5. ªÄÄÆV£À£ÀvÄÄÛ E¥ÀàvÀªÄÄÆgÄÄ ªÄÄÆ®AV
mUginanattu ippatamUru mUlaMgi
6. JwÛ£ÀUÁr °ÀwÛªÄÄgÀ çÃ¥ÀzÀ§wÛ
ettinagaaDi hattimara deepadabatti
7. £ÉÃgÀ -É°ÀtÄÚ J-ÉCrPÉ -ÉPÀÏ¥ÀvÀæ
nEralehaNNU eleaDike lekkapatra
8. ©½bÀwæ ªÄÄAwæ¨sÀªÀ£À PÄÄvÀAwæ
biLiCatri maMtriBavana kutaMtri

9. ¥ÉÆÃµÀPÀgÄÄ µÀlâç «µÀPÁj
pOShakaru ShaTpadi viShakAri

10. C¥À°Á,Àå ,À,Áå°Áj gÀ°À,Àå
apahAsya sasyAhAri rahasya

Note: Pictures are not provided for this activity.

B. Words: Section 1

a. Word identification (Yes/no)

Level 1: Give the word card/stimuli along with the picture card and ask the person with aphasia to indicate yes/no if the picture and the word means the same or not.

Level 2: Give the picture card and ask the person with aphasia to select the respective word card/stimuli for the picture.

Level 3: Read the word card/stimuli and say it aloud.

Stimuli: [Source Manual for Adult Fluent Aphasia Therapy-In Kannada (MAFAT-K)]

(a) body parts

- | | | | |
|------------|--------|-------------|--------|
| 1. vÀ-É | Tale | 9. °À®Äè | hallu |
| 2. PÀvÄÄÛ | kattu | 10. PÉÊ | kai |
| 3. PÀtÄÚ | kaNNu | 11. PÁ®Ä | kAlu |
| 4. Q« | kivi | 12. °ÉÆmÉÖ | hoTTe |
| 5. °ÄÄÆUÄÄ | mUgu | 13. °É£ÄÄß | bennu |
| 6. °Á-Ä | bAyi | 14. °ÉgÀ¼ÄÄ | bralu |
| 7. vÄÄn | tuTi | 15. PÀÆzÀ®Ä | kUdalU |
| 8. £Á°UÉ | nAlige | | |

(b) **Gadgets**

- | | | | |
|-------------|--------|--------------|--------|
| 1. ¥sÁâ£ÀÄ | phyAnu | 4. gÉÃrAiÉÆÃ | rEDiyO |
| 2. n.«. | Ti.vi. | 5. lüæqiÓ | phriDj |
| 3. ¥sÉÆÃ£ÀÄ | phOnu | | |

(c) **Furniture**

- | | | | |
|-----------------------|--------|-----------------------|--------|
| 1. ^a ÉÄÃdÄ | mEju | 4. QIQ | kiTaki |
| 2. PÄÄað | kurchi | 5. ^{..} ÁV®Ä | bAgilu |
| 3. ^a ÄÄAZÄ | maMca | | |

(d) **Animals**

- | | | | |
|------------------------|--------|------------------------|-------|
| 1. £Á¬Ä | nAyi | 9. D£É | Ane |
| 2. ^{..} ÉPÄÄÌ | Bekku | 10. °ÄÄ° | huli |
| 3. °Ä, ÄÄ | Hasu | 11. ¹A°Ä | siMha |
| 4. J ^a ÉÄä | emme | 12. E° | ili |
| 5. PÉÆÄ½ | kOLi | 13. ^a ÉÆ® | mola |
| 6. ^a ÉÄÄPÉ | mEke | 14. °Á ^a ÄÄ | hAvu |
| 7. PÄÄzÄÄgÉ | kudure | 15. PÄ¥Éà | kappe |
| 8. PÉÆÄw | kOti | | |

(e) **Vehicles**

- | | | | |
|------------------------|--------|--------------------------|------------|
| 1. §, ÄÄì | bassu | 7. fÄ¥ÄÄ | jIpu |
| 2. PÁgÄÄ | kAru | 8. [,] ÉÊPÄ¬i | saikal |
| 3. DmÉÆ | ATo | 9. °ÄqÄUÄÄ | haDagu |
| 4. [,] ÄÆÌlgì | skUTar | 10. gÉÊ®Ä | Railu |
| 5. ^{..} ÉÊPÄÄ | baiku | 11. « ^a ÄiÁ£Ä | vimAna |
| 6. - Áj | lAri | 12. JwÛ£ÄUÁr | ettinagADi |

(f) **Vegitables**

- | | | | |
|--------------------------|----------|----------------------------|--------------|
| 1. mÉÆ ^a ÉÆmÉ | TomoTo | 9. ^a ÉÄt¹£ÄPÁ¬Ä | meNasinakAyi |
| 2. D®ÆUÄqÉØ | AlUgaDDe | 10. ^{..} ÉAqÉPÁ¬Ä | beMDekAyi |

- | | | | |
|----------------|------------|-----------------|-------------|
| 3. FgÄÄ½î | IruLLi | 11. J-ÉPÉÆÄ, ÄÄ | elekOsu |
| 4. PÅågÉmi | kyAreT | 12. °ÀÆPÉÆÄ, ÄÄ | hUkOsu |
| 5. ,ËvÉPÁ-Ä | sautekAyi | 13. αA·É°ÀtÄÜ | niMbehaNNU |
| 6. aÄÄÆ®AV | mUlaMgi | 14. PÄÄA§¼ÄPÁ-Ä | kuMbaLakAyi |
| 7. °ÄÄgÄÄ½PÁ-Ä | huruLikAyi | 15. °ÁUÄ®PÁ-Ä | hAgalakAYi |
| 8. §mÁtÁ | baTANi | | |

(g) Colours

- | | | | |
|------------|--------|-------------|--------|
| 1. PÉA¥ÄÄ | keMpu | 6. ©½ | biLi |
| 2. °À¹gÄÄ | hasiru | 7. PÀ¥ÄÄà | kappu |
| 3. °À¼Äç | haLadi | 8. PÄAzÄÄ | kaMdu |
| 4. αÄ° | neeli | 9. UÄÄ-Á© | gulAbi |
| 5. PÉÄ, Äj | kEsari | 10. £ÉÄgÄ¼É | nEraLe |

Note: Pictures are provided for this activity.

b. Jumble/rearrange

Level 1: Give the jumbled word card and read it aloud. Keep the picture card/stimulus one the table. Ask the person with aphasia to rearrange the syllables and make a word.

e.g.: «Q viki Q« kivi

Note: Stimuli and picture from the sub-section A. Word identification are used for this level.

Level 2: Give the jumbled word card/stimulus and ask the person with aphasia to rearrange and make a word.

Stimuli:

- | | | |
|--------------------------|-----------------------|---|
| 1. IH | TaU | (HI UTa) |
| 2. £É ^a ÄÄ | nema | (^a ÄÄ£É mane) |
| 3. UÄÄ ^a ÄÄ | guma | (^a ÄÄUÄÄ magu) |
| 4. I ⁻ ÉÆÄ | TalO | (⁻ ÉÆÄI IOta) |
| 5. £ÄÄß¥É | nnupe | (¥É£ÄÄß pennu) |
| 6. ¥Ä ^{1/4} Ä§ | paLaba | (§ ^{1/4} Ä¥Ä baLapa) |
| 7. gÄÄ ^a ÉÆ,Ä | rumosa
mosaru) | (^a ÉÆ,ÄgÄÄ |
| 8. ^{1°} ÄgÄÄ | siharu | ([°] Ä ¹ gÄÄ hasiru) |
| 9. AiÄiÄrUÄgÄ | yADigara
gaDiyAra) | (UÄrAiÄiÄgÄ |
| 10. vÄPÄgÄj | takArari | (vÄgÄPÄj tarakAri) |

c. Word completion

Level 1: Give the word card/stimulus along with the picture card/stimulus. Ask the person with aphasia to supply the missing syllable appropriately to make a word by choosing from the given choices.

e.g.: vÄ_ (¥É, ⁻É, mÉ)
ta_ (pe, le, Te)

Note: Stimuli and picture from the sub-section a. Word identification are used for this level.

Level 2: Give the word card/stimulus and ask the person with aphasia to supply the missing syllable and make a word.

Stimuli:

- | | | |
|--|---------|---|
| 1. ZÄ [°] | ca_li | (¥Äàppa, jri, ÄbA) |
| 2. «_£Ä | vi_na | (PÄ _{ka} , ^a ÄiÄmA) |
| 3. _«gÄ | _vira | (AiÄiÄyA, ÄsA) |
| 4. GUÄÄ_ ugu_ | | (^a ÄÄma, gÄÄru) |
| 5. ^a ÄÄgÄ ^{1/4} ÄÄ | mara_Lu | (UÄga, PÄ _{ka}) |

- | | | |
|--------------------------|---------|--------------------------------------|
| 6. zÉÃ ^a À_£À | dEva_na | (,ÁÜsthA, ,ÀåsyA) |
| 7. PÀ_UÀ¼ÄÄ | ka_gaLu | (®Äèllu, £ÄÄß nnu) |
| 8. ©ÄUÀzÀ_ | bIgada_ | (PÉÊ kai, ¥ÉÊ pai) |
| 9. _®zÀ_gÀ _lada_ra | | (DA, UÀga, ^a ÄÄma, zÉÃdE) |
| 10. _gÉ_¬Ä _re_yi | | (PÁkA, ,ÉÆÄsO, ¨ÁbA, ¼ÄÄ Lu) |

Section 2:

a. Plurals

Level 1: Give the word card/stimuli and read it aloud. Ask the person with aphasia to point to the picture as clinician reads.

Level 2: Give the picture card and ask the person with aphasia to select the appropriate word card/stimuli of the plural form.

Stimuli:

- | | |
|---------------------------|-------------|
| 1. ^a ÄÄgÀUÀ¼ÄÄ | maragaLu |
| 2. PÀtÄÚUÀ¼ÄÄ | kaNNugaLu |
| 3. gÀ,ÉÛUÀ¼ÄÄ | rastegaLu |
| 4. ^a ÄÄ£ÉUÀ¼ÄÄ | manegaLu |
| 5. ¥ÄÄ,ÀÛPÀUÀ¼ÄÄ | pustakagaLu |
| 6. ¨ÉgÀ¼ÄÄUÀ¼ÄÄ | beraLugaLu |
| 7. ^a ÄÄPÀ¼ÄÄ | makkaLu |
| 8. °ÉAUÀ,ÀgÄÄ | heMgasaru |
| 9. °ÄÄqÄÄUÀgÄÄ | huDugaru |
| 10. °ÄÄqÄÄVAiÄÄgÄÄ | huDugiyaru |

Note: Pictures are provided for this activity.

b. Tenses

Level 1: Clinician reads the sentence and picture cards will be kept on the table. Person with aphasia will be asked to point to the picture which depicts the sentence clinician reads.

Level 2: Ask the person with aphasia to read the card and point to the respective picture.

Stimuli:

1. °ÄÄqÄÄV §gÉAiÄÄÄvÁÛ¼É huDugi
bareyuttALe
°ÄÄqÄÄV §gÉAiÄÄÄwÛzÁÝ¼É huDugi
bareyuttiddALe
°ÄÄqÄÄV §gÉzÀ¼ÄÄ huDugi baredaLu

2. CUÀ,À §mÉÖ MUEAiÄÄÄvÁÛ¼É agasa baTTe
ogeyuttAne
CUÀ,À §mÉÖ MUEAiÄÄÄwÛzÁÝ¼É agasa
baTTe ogeyuttiddAne
CUÀ,À §mÉÖ MUEzÀ¼ÄÄ agasa baTTe
ogedanu

3. °ÄÄqÄÄUÀ DI DqÄÄvÁÛ¼É huDuga ATa ADuttAne
°ÄÄqÄÄUÀ DI DqÄÄwÛzÁÝ¼É huDuga ATa
ADuttiddAne
°ÄÄqÄÄUÀ DI DrzÀ huDuga ATa ADida

4. °ÄÄqÄÄVAiÄÄÄ ¢ÃgÄÄ PÄÄrAiÄÄÄvÁÛ¼É huDugiyu neeru kuDiyuttALe
°ÄÄqÄÄVAiÄÄÄ ¢ÃgÄÄ PÄÄrAiÄÄÄwÛzÁÝ¼É huDugiyu neeru kuDiyuttiddALe
°ÄÄqÄÄVAiÄÄÄ ¢ÃgÄÄ PÄÄrzÀ¼ÄÄ huDugiyu
neeru kuDidaLu

5. °ÉAUÀ,ÄÄ ¥ÁvÉæ vÉÆ¼ÉAiÄÄÄvÁÛ¼É heMgasu
pAtre toLeyuttALe
°ÉAUÀ,ÄÄ ¥ÁvÉæ vÉÆ¼ÉAiÄÄÄwÛzÁÝ¼É heMgasu
pAtre toLeyuttiddALe

- °ÉAUÀ,ÀÄ ¥ÁvÉæ vÉÆ¼ÉzÀ¼ÄÄ heMgasu pAtre
toLedaLu
6. °ÄÄqÄÄUÀ£ÄÄ QIQ vÉUÉAiÄÄÄvÁÛ£É huDuganu
kiTaki tegeyuttAne
°ÄÄqÄÄUÀ£ÄÄ QIQ vÉUÉAiÄÄÄwÛzÁÝ£É huDuganu
kiTaki tegeyuttiddAne
°ÄÄqÄÄUÀ£ÄÄ QIQ vÉUÉzÀ£ÄÄ huDuganu kiTaki
tegedanu
7. C^aÀ£ÄÄ °Á¼É°ÀtÄÚ w£ÄÄßvÁÛ£É avanu
bALehaNNU tinnuttAne
C^aÀ£ÄÄ °Á¼É°ÀtÄÚ w£ÄÄßwÛzÁÝ£É avanu
bALehaNNU tinnuttiddAne C^aÀ£ÄÄ °Á¼É°ÀtÄÚ wAzÀ£ÄÄ
avanu bALehaNNU tiMdanu
8. D^aÀ¼ÄÄ §mÉÖ PÀvÀÛj,ÄÄvÁÛ¼É AvaLu
baTTe kattarisuttALe
D^aÀ¼ÄÄ §mÉÖ PÀvÀÛj,ÄÄwÛzÁÝ¼É AvaLu baTTe
kattarisuttiddALe
D^aÀ¼ÄÄ §mÉÖ PÀvÀÛj¼zÀ¼ÄÄ AvaLu baTTe
kattarisidaLu
9. ^aÄÄUÄÄ °ÀÆ^aÄÄ QÃ¼ÄÄvÁÛzÉ magu hUvu
kILuttade
^aÄÄUÄÄ °ÀÆ^aÄÄ QÃ¼ÄÄwÛzÉ magu hUvu
kILuttide
^aÄÄUÄÄ °ÀÆ^aÄÄ QÃ½vÄÄ magu hUvu kILitu
10. C^aÀ£ÄÄ °À®Äè GdÄÓvÁÛ£É avanu hallu ujjuttAne
C^aÀ£ÄÄ °À®Äè GdÄÓwÛzÁÝ£É avanu hallu
ujjuttiddAne
C^aÀ£ÄÄ °À®Äè GfÓzÀ£ÄÄ avanu hallu ujjidanu

Note: Pictures are provided for this activity.

c. **Synonyms (adapted from MAFAT-K)**

Level 1: keep the picture card/stimulus on the table and read the word cards. Ask the person with aphasia to point to the word cards which means the same.

Level 2: Ask the person with aphasia to read the word card/stimulus and pick the one's which mean the same.

Stimuli:

- | | |
|---|------------------------|
| 1. ^a ÀÄ£É: UÀÈ°À, ^a ÀÄAZÀ | mane: gRuha, maMca |
| 2. °ÀvÀÄÛ: KgÀÄ, JvÀÄÛ | hattu: Eru, ettu |
| 3. aPÀÌ: ,ÀtÚ, ¥ÀÄIÖ | cikka: saNNa, puTTa |
| 4. zÀÄqÀÄØ: PÁ, ÀÄ, PÀtÄÚ | duDDu: kAsu, kaNNu |
| 5. DPÁ±À: DgÀÄ, DUÀ, À | AkAsha: Aru, Agasa |
| 6. , ^a ÀÄAiÀÄ: ¥É£ÀÄß, WÀAmÉ | samaya: pennu, ghaMTe |
| 7. PÁqÀÄ: °Á ^a ÀÄ, CgÀtå | kADu: hAvu, araNya |
| 8. PÀÄwÛUE: °ÉÆmÉÖ, PÉÆgÀ¼ÀÄ | kuttige: hoTTe, koraLu |
| 9. zÉ ^a À, ÁÜ£À: UÀÄr, çÄ¥À | dEvasthAna: guDi, dIpa |
| 10. ,ÁUÀgÀ: £Àç, , ^a ÀÄÄzÀæ | sAgara: nadi, samudra |

Note: Pictures are provided for this activity.

d. Antonyms (adapted from MAFAT-K)

Level 1: Read the word and ask the person with aphasia to point to the card which has opposite meaning to the word read by clinician.

Level 2: Ask the person with aphasia to read the words and match the one's with opposite meaning.

Stimuli:

- | | |
|----------------------------------|-------------------------|
| 1. zÉÆqÀØzÀÄ: aPÀÌzÀÄ, GzÀÝ | doDDadu: chikkadu, udda |
| 2. ^a ÀÄÄAzÉ: §®, »AzÉ | muMde: bala, hiMde |

- | | |
|----------------------------|------------------------|
| 3. ,ÀtÚ: zÀŸÀà, PÀŸÀÄà | saNNa: dappa, kappu |
| 4. GzÀÝ: UÀÄAqÀÄ, VqÀØ | Udda: gunDu, giDDa |
| 5. °ÉÄÄ -É: PÉ¼ÀUÉ, M¼ÀUÉ | mEle: keLage, oLage |
| 6. M¼ÀUÉ: Dfi, °ÉÆgÀUÉ | oLage: An, horage |
| 7. °ÀwÛgÀ: zÀÆgÀ, °ÄÄÄAzÉ | hattira: doora, muMde |
| 8. UÀnÖ: °ÉÄvÀÛfé, ©¹ | gaTTi: mettane, bisi |
| 9. °É½UÉÎ: gÁwæ, PÀŸÀÄà | beLiGGe: raatri, kappu |
| 10. °sÁgÀ: °ÀUÄÄgÀ, °ÀwÛgÀ | bhAra: hagura, hattira |

Stimuli:

- | | |
|-----------------------------|------------------------|
| 1. ,ÀvÀå- C, ÀvÀå, ©½ | satya- asatya, biLi |
| 2. ,ÀAvÉÆÄµÀ-zÀÄR, PÀµÀÖ | saMtOSha-dukha, kaShTa |
| 3. -Á°sÀ-£ÀµÀÖ, ,ÀÄR | laabha-naShTa, sukha |
| 4. dAiÄÄ-CŸÀdAiÄÄ, ¹» | Jaya-apajaya, sihi |
| 5. ,ÄÄAzÀgÀ-PÄÄgÀÆŸÀ, zÀŸÀà | suMdara-kuroopa, dappa |
| 6. eÁt-zÀqÀØ, ŸÄÄ, ÀÛPÀ | jaaNa-daDDa, pustaka |
| 7. ,Àj-vÀŸÄÄà, ,ÄÄ¼ÄÄî | sari-tappu, suLLu |
| 8. HvÀÛgÀ-zÀQët, ŸÀÆªÀð | Uttara-dakShiNa, pUrva |
| 9. §®-JqÀUÀqÉ, °ÉÄÄ -É | bala-eDagaDe, mEle |
| 10. eÁt-zÀqÀØ, ,ÄÄAzÀgÀ | jaaNa-daDDa, suMdara |

Note: Pictures are not provided for this activity.

READING: LEVEL III

This level contains following three sections.

A. Part 1:

- a. Sentence completion
- b. Sentence verification
- c. Sentence sequencing

Part 2: topographic/geographic orientation

B. Discourse level Reading comprehension

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

➤ **Pictures for this level are shown in Appendix 3**

A. Part 1

This section consists of following sub-sections:

- a. Sentence completion
- b. Sentence verification
- c. Sentence sequencing

Stimulus mode hierarchy:

- Combination of auditory, visual and graphic (A+V+G)
- Combination of auditory and graphic (A+G)
- Graphic only (A)

Response mode hierarchy

- Pointing (P)
- Combination of pointing and verbal (P+V)
- Verbal only (V)

a. Sentence completion

Level 1: Give the sentence card with a missing word. Clinician will read the sentence aloud.

Next, show the picture card and ask the person with aphasia to look at the card and choose the right word out of choices.

Stimuli:

1. EzÄÄ PÁgÄÄ. (PÉA¥ÄÄ, PÀ¥ÄÄà, ¢Ä°)
idukAru. (keMpu, kappu, nlli)
2. ¥ÄÄnÖ w£ÄÄßwÛzÁÝ¼É. (DI, °ÀtÄÚ, ¥ÁI)
puTTitinnutiddALe. (ATa, hannu, pATa)

3. mÉÆÃ! °ÁQPÉÆArzÁÝ£É. (°ÀÄqÀÄUÀ,
°ÀÄqÀÄV, °ÀÄUÀÄ)
.....TOpi hAkikoMDiddAne. (huDuga, huDugi, magu)
4. n. « °ÉÆÃ«£À °ÉÆPÉÌ EzÉ. (°ÉÄÄ-É, PÉ¼ÀUÉ,
M¼ÀUÉ)
Ti. vi.hOvina bokke ide. (mEle, keLage, oLage)
5. QIQ °Á¼ÉUÀ¼ÄÄ (°ÀÄÄaÑ°É, vÉgÉç°É, °ÀÄÄjç°É)
kiTaki hALegaLu..... (muccive, tere dive, muridive)
6. °ÀÄPÀÌ¼ÄÄ , Á-ÁV ðAvÄÄ °ÀiÁqÀÄwÛzÁÝgÉ.
(¥ÁæxÀð£É, HI, DI)
makkaLu sAlAgi niMtumADuttiddAre. (prArthane, UTa, ATa)
7. °ÀtÄÚUÀ¼Ä °ÉÄÄ-É £ÉÆt (°ÀÄ®VzÉ,
PÀÄ½wzÉ, PÀÄ½wzÁÝgÉ)
haNNina mEle noNa (malagide, kuLitide, kuLitiddAre)
8. C°À¼ÄÄ §mÉÖ (MUÉAiÀÄÄwÛzÁÝ¼É,
°ÀjAiÀÄÄwÛzÁÝ¼É, w£ÀÄßwÛzÁÝ¼É)
avaLu baTTe(ogeyuttiddALe, hariyuttiddALe, tinnuttiddALe).
9. §,ÄÄì vÄÄA© ðAwzÉ. (d£ÀUÀ½AzÀ,
°ÀÄPÀÌ½AzÀ, ¥ÁætÂUÀ½AzÀ)
bassu tuMbi niMtide. (janagaLiMda, makkaLiMda, prANigaLiMda)
10. °À,ÄÄ°À°ÉÄÄzÁ£ÀzÀ°è °ÉÄÄAiÀÄÄwÛzÉ.
(°ÀÄ®è£ÀÄß, °ÀÄ°èðAzÀ, °ÀÄ°èUÉ)
hasuvu maidAnadallimEyuttide. (hullannu, hulliniMda, hullige)

Note: Pictures are provided for this activity.

Level 2: This level consists of sentences with multiple missing words and pictures are not being provided. Give the sentence card with the missing word and the choices. Clinician

reads them aloud and asks the person with aphasia to choose the right word by underlining the word and reading it aloud.

Stimuli:

1. CrUÉUÉ E®èzÉ M¼ÉîAiÀÄ gÀÄa (,ÀPÀìgÉ, G¥ÀÄà, EzÉ, E®è)
aDigege illade oLleya ruci (sakkare, uppu, ide, illa)
2.UÉ §tÚ-§tÚzÀ JAzÀgÉ vÀÄA·Á µÀÖ.
(^aÀÄPÀì¼ÀÄ, CfÓUÉ, nÃ.«., DlzÀ,Á^aÀiÁ£ÀÄ)
..... ge baNNa-baNNa eMdare tuMbA ShTa. (makkaLu, ajjige, TI.vi., ATadasAmAnu)
3. ¥ÀæwαvÀå ^aÀiÁqÀÄ^aÀÄzÀjAzÀ zÉÃ°AzÀ
ZÉ£ÁβVgÀÄvÀÛzÉ.
(DgÉÆÃUÀå, ^aÁåAiÀiÁ^aÀÄ, ,ÀPÀìgÉ)
pratinitya mADuvudariMda dEhada cennAgiruttade.
(ArOgya, vyAyAma, sakkare)
4. C^aÀgÀÄ °ÉÆÃV vÀgÀPÁj ^aÀÄvÀÄÛ
PÉÆAqÀÄvÀAzÀgÀÄ.
(§,ï α-ÁÝt, ,ÀAvÉ, OµÀçü, °ÀtÄÚ)
avaru hOgi tarakAri mattu koMDutaMdaru.
(bas nildANa, saMte, auShadhi, haNNU)
5. ^aÀÄÆgÀÄ ç£ÀUÀ½AzÀ EzÀÄÝzÀjAzÀ
§½ °ÉÆÃUÀ·ÉÃPÁ-ÄvÀÄ. (°ÀÄ±ÁgÀÄ, dégÀ, CAUÀr, qÁPÀÖgi)
mUru dinagaLiMda iddudariMda baLi hOgabEkAyitu.
(hushAru, jvara, aMgaDi, DAKTar)
6. ^aÉÄÊ, ÀÆj£À°è ·sÁj EAzÁV ,ÁPÀµÀÄÖ
±ÉÃRgÀuÉAiÀiÁVzÉ.
(^aÀÄ¼É, ^aÀÄ¼ÉαÁgÀÄ, ©gÀÄUÁ½, ^aÀÄtÄÚ)
maisUrinali bhAri iMdagi sAKaShTu shEKaraNeyAgide.
(maLe, maLenIru, birugALi, maNNU)

7. D vÄÄvÄÛvÄÄçUÉ °ÄvÄÛ®Ä
 AiÄÄÄ^aÄPÄgÄÄ^aÄÄÄAzÉ §AzÄgÄÄ.
 (‘ÉIÖzÄ, ,ÁUÄgÄ, ,ÉÆÄvÄÄ°ÉÆÄzÄ, GvÁì»)

A tuttatudige hattalu yuvakaru muMde baMdaru.
 (beTTada, sAgara, sOtuHoda, utsAhi)
8. PÉÌ^aÄÄÄAZÉAiÉÄÄ^aÄÄ£ÉAiÄÄ°è
 ,ÄArUÉ, G'ä£ÄPÄ¬ÄUÄ¼Ä£ÄÄß^aÄiÁrqÄÄvÁÛgÉ.
 (‘ÉÄ¹UÉPÄ®,^aÄÄ¼ÉUÄ®, °Ä¥Äà¼Ä, ZÄ¥Áw)
 kke muMceyE maneyalli, saMDige, uppinakAyigaLannu
 mADiDuttAre. (bEsigekAla, maLegAla, happaLa, capAti)
9. ¥Äj, ÄgÄ PÄr^aÉÄ^aÄiÁqÄ®Ä
 §¼ÄPÉAiÄÄ£ÄÄß µÉÄçü¹ §¼ÄPÉAiÄÄ£ÄÄß
 gÄÆrü^aÄiÁqÄ‘ÉÄPÄÄ. (,ÉAzÄAiÄÄð, ^aÄiÁ°£Äâ, ¥Äè¹ÖPì,
 PÄUÄzÄ)
 parisara kaDime mADalu baLakeyannu niShEdhisi
 baLakeyannu rUDhi mADabEku. (souMdarya, mAlinya, plAsTik, kAgada)
10. gÄ, ÉÛ ¥Ä°, ÄÄ^aÄÄzÄjAzÄ FUÄ DUÄÄwÛgÄÄ^aÄ
 ,ÄASÉâ µAiÄÄAvÄæt^aÄiÁqÄ§°ÄÄzÄÄ. (,ÄASÉâ,
 µAiÄÄ^aÄÄ, ,ÄAZÁgÄ, C¥ÄWÁvÄ)
 raste pAlisuvudariMda Iga Agittiruva saMKye niyaMtraNa
 mADabahudu. (saMKye, niyama, saMcAra, apaghAta)

Note: Pictures are not provided for this activity.

b. Sentence verification

Level 1: Give the sentence card along with picture and read it aloud. Ask the person with aphasia to indicate whether the sentence read by the clinician is right/wrong.

Level 2: Give the sentence card and ask the person with aphasia to read it and indicate whether the sentence read by the clinician is right/wrong.

Level 3: If the sentences are wrong, ask the person with aphasia to correct it and say.

Stimuli:

1. §,ÄÄiUÄ¼ÄÄ °ÉÆÄUÄÄwÛzÉ.
bassugaLu hOguttide.
2. Vα ¥ÄdgÄzÄ°è EªÉ.
gini pajaradalli ive.
3. °ÄQÌ UÄÆr£Ä ªÉÄÄ~É °ÁgÄÄwzÉ.
Hakki gUDina mEle hArutide.
4. CªÄ£ÄÄ PÄ,Ä UÄÄr,ÄÄwÛzÁÝ£É.
avanu kasa guDisuttiddAne.
5. ªÄÄUÄÄ vÄmÉÖAiÉÆ¼ÄUÉ ªÄÄ®VzÉ.
magu taTTeyoLage malagide.
6. DPÄ±Ä£Ä ZÄAzÄæ ZÄÄQÌ EzÉ.
Akashana caMdra cukki ide.
7. vÄmÉÖAiÉÆ¼ÄUÉ αÄj£Ä ~ÉÆÄI EªÉ.
taTTeyoLage nIrina IOTa ive.
8. CªÄ£ÄÄ ªÄÄgÄç PÉ®UÄqÉ PÄÆ¼ÄÄwzÄÝ£É.
avanu maradi kelagaDe kULutiddane.
9. CªÄgÄÄ ¥sÉÆÄ~αVAvÄ ªÄiÁvÄ£ÁqÄÄvÁÛgÉ.
avaru phOnigiMta mAtanADuttAre.
10. CªÄ¼ÄÄ CAZÉ ¥ÉnÖUÉ~ÄAzÄ ¥ÄvÄæ °ÁPÄÄwÛzÁÝ£É.
avaLu aMce peTTigeyiMda patra hAkuttiddAne.

Note: Pictures are provided for this activity.

c. Sentence sequencing

Level 1: This activity contains three stimuli with three sequential picture cards/stimuli along with the word card/stimulus for each picture.

Give one set of picture cards/stimuli along with its word card/stimuli which are arranged in different order.

Task: Clinician will read the word card/stimulus and the person with aphasia is expected to look at the picture and arrange the sentences in an appropriate sequence.

Level 2: Give the three picture cards/stimuli and the respective word card/stimulus. Ask the person with aphasia to read the cards and keep them below the respective picture.

Stimuli:

Set 1:

1. ^aÀÈzÀP£ÀÄ C^aÀ£ÀÄ °Á¹UÉAiÉÆAzÀ
EzÉÝÄ¼ÀÄwÛzÁÝ£É.
vRuddhanu hAsigeyoMda iddELuttiddAne.
2. ^aÀÈzÀP£ÀÄ °À®è£ÀÄß GdÄÓwÛzÁÝ£É.
vRuddhanu hallannu ujjuttiddAne.
3. ^aÀÈzÀP£ÀÄ wAr w£Àß®Ä mÉÄ§⁻ⁱ ^aÉÄÄ^{-É} PÄÄ½wzÁÝ£É.
vRuddhanu tiMDi tinnalu TEbal mEle kuLitiddAne.

Set 2:

1. °ÉAUÀ,ÄÄ CAUÀr-ÄAzÀ °Á®Ä PÉÆ¼ÄÄîwÛzÁÝ¼É.
avaLu aMgaDiyiMda hAlu taruttiddALe.
2. °ÉAUÀ,ÄÄ CrUÉ^aÄÄ£ÉAiÄÄ°è nÄ ^aÀiÁqÄÄwÛzÁÝ¼É.
avaLu aDigemaneyalli TI mADuttiddALe.
3. °ÉAUÀ,ÄÄ CwyUA½UÉ nÄ PÉÆqÄÄwÛzÁÝ¼É.
avaLu atithigaLige TI koDuttiddALe.

Set 3:

1. C^aÀ£ÀÄ zÁjAiÄÄ°è £ÀqÉAiÄÄÄwÛzÁÝ£É.

Avanu dAriyalli naDeyuttiddAne.

2. C^aÀ£À PÁ°UÉ £Á-Ä PÀZÀÄÑwÛzÉ.

Avana kAlige nAyi kaccuttide.

3. ^aÉÊzÀågÀÄ C^aÀαUÉ ZÄÄZÄÄÑ^aÄÄzÄÄÝ
PÉÆqÄÄwÛzÁÝgÉ.

Vaidyaru avanige cuccumaddu koDuttiddAre.

Note: Pictures are provided for this activity.

Part 2: Topographic/Geographic orientation

This section aims to teach various topographical/geographical orientations which are commonly used in day to day life. Clinician is expected to give activities that include following basic directions such as left, right, straight, back, understanding poles-east, west, north, south and also these activities can be extended to reading road maps.

Stimuli are not provided for this activity. However, clinician is free to generate activities which are more oriented towards the interests of the individual with aphasia.

C. Discourse level Reading comprehension

Level 1: Keep the passage in front and ask the person with aphasia to follow the sentences as the clinician reads it aloud. Next, clinician will read aloud the statements and person with aphasia is expected to indicate whether the statement is right/wrong.

Level 2: Keep the passage in front and ask the person with aphasia to follow the sentences as the clinician reads it aloud. Ask the following questions. Person with aphasia should mark the answer word out of choices given.

Stimuli:

Passage: (Adapted from RAP-K)

MAzÀÄ ç£À «dAiÀÄ ±Á-ÉUÉ °ÉÆÃUÀÄwÛzÀÝ£ÀÄ.
 zÁjAiÀÄ°è vÀÄÄ°Á d£ÀgÀÄ, °Á°À£ÀUÀ¼ÄÄ
 NqÁqÀÄwÛzÀÝªÄÄ. C°è M§â PÀÄgÀÄqÀ
 °ÉÆÃUÀÄwÛzÀÝ£ÀÄ. CªÀ£ÀªÀÄÄAzÉ MAzÀÄ UÁf£À
 ZÀÆgÀÄ ©çÝvÀÄÛ. «dAiÀÄ£ÀÄ CzÀ£ÀÄß £ÉÆÃrzÀ£ÀÄ.
 °ÉÆÃUÀ£É C°èUÉ °ÉÆÃzÀ£ÀÄ. D UÁf£À ZÀÆgÀ£ÀÄß zÀÆgÀ
 J,ÉzÀ£ÀÄ. £ÀAvÀgÀ CªÀ£ÀÄ ±Á-ÉUÉ °ÉÆÃzÀ£ÀÄ.

oMdu dina vijaya shAlege hOguttiddanu. dAriyalli tuMbA janaru, vAhanagaLu
 ODADuttiddavu. alli obba kuruDa hOguttiddanu. Avana muMde oMdu gAjina cUru biddittu.
 vijayanu adallu nODidanu. bEgane allege hOdanu. A gAjina cUrannu dUra esedanu. naMtara
 avanu shAlege hOdanu.

Statements:

- | | |
|---|---|
| 1. «dAiÀÄ£ÀÄ ±Á-ÉUÉ
°ÉÆÃUÀÄwÛzÀÝ£ÀÄ. | vijayanu shAlege hOguttiddanu. |
| 2. zÁjAiÀÄ°è vÀÄÄ°Á d£ÀgÀÄ
NqÁqÀÄwÛzÀÝgÀÄ. | dAriyalli tuMbA janaru ODADuttiddaru. |
| 3. zÁjAiÀÄ°è PÀ°è£À ZÀÆgÀÄ
©çÝvÀÄÛ. | dAriyalli kallina cUru biddittu. |
| 4. «dAiÀÄ£ÀÄ UÁf£À
ZÀÆgÀ£ÀÄß C°èAiÉÄÄ
©IÖ£ÀÄ. | vijayanu gAjina cUrannu alliyE biTTanu. |
| 5. ±ÀAPÀgÀ£ÀÄ £ÀAvÀgÀ
ªÀÄ£ÉUÉ °ÉÆÃzÀ£ÀÄ. | shaMkaranu naMtara manege hOdanu. |

Questions:

1. $Ai\hat{A}i\acute{A}g\ddot{A}\ddot{A} \pm \acute{A}^{-} \acute{E}U\acute{E}$ YArū shAlege hOguttiddaru?
 $^{\circ}\acute{E}\acute{E}\tilde{A}U\ddot{A}\ddot{w}\hat{U}z\grave{A}\acute{Y}g\ddot{A}\ddot{A}?$
2. $z\acute{A}jAi\ddot{A}\ddot{A}^{\circ}\grave{e} Ai\hat{A}i\acute{A}g\ddot{A}\ddot{A}$ dAriyalli yArū ODADuttiddaru?
 $Nq\acute{A}q\ddot{A}\ddot{w}\hat{U}z\grave{A}\acute{Y}g\ddot{A}\ddot{A}?$
3. $U\acute{A}f\grave{A} Z\grave{A}\acute{E}g\ddot{A}\ddot{A} J^{\circ}\grave{e} \textcircled{c} \acute{Y}v\ddot{A}\ddot{A}\hat{U}?$ gAjina cUrū elli biddittu?
4. $\ll dAi\ddot{A}\ddot{A}\grave{A}\ddot{A} U\acute{A}f\grave{A} Z\grave{A}\acute{E}g\ddot{A}\grave{A}\ddot{A}\beta$ vijayanu gAjina cUrannu Enu mADidanu?
 $K\grave{A}\ddot{A} \acute{A}i\acute{A}rz\grave{A}\grave{A}\ddot{A}?$
5. $\grave{A}Av\grave{A}g\grave{A} \ll dAi\ddot{A}\ddot{A}\grave{A}\ddot{A} J^{\circ}\grave{e}U\acute{E}$ naMtara vijayanu ellige hOdanu?
 $^{\circ}\acute{E}\acute{E}\tilde{A}z\grave{A}\grave{A}\ddot{A}?$

Note: This passage will be retained in the manual. Only the statement and question cards will be presented as sentence cards.

WRITING

LEVEL I: FUNCTIONAL WRITING

This level is divided into following sections:

A. Pen/pencil grip

B. Eye-hand co-ordination

C. Writing/signing his/her name

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

➤ **Pictures are not provided for this level.**

General guidelines to carry out these activities:

- Check for hand preference of person's with aphasia. In persons with right side paresis initially left hand is preferred and with recovery of strength in right hand, person can switch over to right side hand for writing.

- Check for sitting and writing positions of person with aphasia. Straight/up-right sitting posture with proper control of arms and lower extremities should be practiced as warm-up before starting to write.
- Hold/Place the writing material at appropriate distance from person with aphasia.
- Place the writing material in the vicinity of the visual field of the person with aphasia.
- Tilt the writing paper towards the dominant hand (or hand used for writing) of the person with aphasia. For proper paper positioning, tape the paper in correct position or use clipboard to keep the paper from slipping.
- Initially train the person with aphasia to write in lined sheets with highlighted margins. In later stages person with aphasia can be trained to write in blank sheets.
- Use black or any primary colours for writing.
- Background colour can be modified to suit the visual deficits of persons having more visual problems.
- Follow the stimulus and response mode hierarchy.
- Reduce distractions
- Develop interest in activity by making him write his name in post letters, gift covers, wishing cards, and personal documents.
- Clinician should demonstrate each activity by giving enough time for the person with aphasia to observe and understand the procedure.

A. Pen/pencil grip

The ‘**Tripod**’ pencil grasp, holding the pencil with the thumb and index and middle finger is most used for writing. The abilities to move fingers in isolation of each other, adequate hand muscle strength and wrist stability are required for a matured pencil grasp. An

appropriate pencil grasp is one that allows the greatest movement and is the least fatiguing for the muscles of the hand.

Following activities are expected to improve pencil/pen grasp:

- a. Hand strengthening activities
- b. Finger strengthening activities
- c. Wrist stability activities
- d. Finger-dexterity activities
- e. Teach the pencil grasp

Stimulus hierarchy:

- Combination of auditory and visual (A+V)
- Auditory (A)

Response hierarchy:

- Gesture (G)

a. **Hand strengthening activities**

Help the person with aphasia build hand strength through tasks that involve gripping an object between the palm and fingers.

Materials: Water, tub and sponge.

Task: Fill the tub with water and ask the person with aphasia to squeeze the sponge into water. Refill and squeeze out. Repeat this activity several times until he can squeeze out the water efficiently.

b. **Finger strengthening activities**

After developing greater hand control, practice finger-strengthening activities.

Materials required: Paper, clothpins, cup, cotton balls, beads.

Task 1: Ask the person with aphasia to tear the paper into strips with their fingers, and then scrunch the paper pieces into balls using one hand.

Task 2: Ask the person with aphasia to pinch the clothespins and arrange them around the lip of the cup.

Task 3: Ask the person with aphasia to pick up the beads/cotton balls one by one and put it in the cup.

c. **Wrist stability activities**

Materials required: Board, marker, colours/crayons, drawing paper, clipboard.

Task 1: Ask the person with aphasia to stand in front of the board and draw a line/circle using the marker. Make sure that the board is above the eye level of person with aphasia.

Task 2: Draw a circle on a white paper and pin to a vertical surface or mount on a clipboard. Ask the person with aphasia to paint the circle without crossing the boundary using the paint brush/crayon on the sheet.

d. **Finger-dexterity activities**

Finger dexterity is the ability to manipulate items with small, controlled movements of a few fingers.

Materials required: Coins, thermacol balls.

Task 1: Ask the person with aphasia to pick up the coins one by one and line up a row of several coins and quickly turn them over.

Task 2: Ask the person with aphasia to take thermacol balls and roll between the thumb and index finger.

Task 3: Have small pieces of paper. Ask the person with aphasia to pick the pieces one by one and stick it on the clipboard.

Scoring: The responses for above mentioned activities should be scored based on the completeness, smoothness and quickness of the hand/finger/wrist movements.

e. **Teach the pencil grasp**

Materials required: Marker, crayon, wide pencil, average sized pencil.

Level 1: Ask the person with aphasia to wrap the fingers on the crayon/marker and hold it in their hand. Clinician will assist manually to hold the marker by supporting the fingers of the person with aphasia.

Level 2: Ask the person with aphasia to wrap the fingers on the crayon/marker and hold it in their hand as demonstrated by the clinician.

Level 3: If person with aphasia demonstrate the correct tripod grip using crayons and markers, introduce a wide pencil, and then to average sized pencil/pen.

B. Eye-hand co-ordination

This section aims at improving eye-hand co-ordination for writing purposes. Eye-hand co-ordination is the ability of the eyes to guide the hands in movements. Visual-motor integration, which is a vital skill for handwriting, grows out of a good hand-eye co-ordination base. The eyes need to guide the hand in forming the letters and making sure they stay within the lines.

Note: Most of the activities of sub-section (A) pen/pencil grip can serve this purpose also. Clinician is free to continue the activities of sub-section (A) and add more activities to improve eye-hand co-ordination.

C. Writing/signing his/her name

Stimulus hierarchy:

- Combination of auditory, graphic and gestural (A+G+G)
- Combination of auditory and graphic (A+ G)
- Auditory (A)

Response hierarchy:

- Combination of Gestural and graphic (G+G)
- Graphic (G)

Level 1: Write the name of person with aphasia on a card using a marker boldly while having his attention. Ask the person with aphasia to trace the letter shapes with his finger.

Level 2: Keep the name card on the table and ask the person with aphasia to trace the letters.

Level 3: Give the dotted representation of his name card. Ask the person with aphasia to join the dotted lines and copy it on a blank sheet.

Level 4: Ask the person with aphasia to write his name/sign from the memory.

Level 5: Write a big box and ask the person with aphasia to write his name/sign inside the box without crossing the lines.

Level 6: Decrease the box size to regular letter size.

Level 7: Draw two lines and ask the person with aphasia to write his name/sign between the lines.

Level 8: Ask the person with aphasia to write his name/sign on a blank sheet.

For some persons with aphasia, all of the above mentioned levels need not be followed. Clinician is free to skip some levels based on the individual performance level.

Scoring: The responses are to be scored based on the letter legibility, letter alignment and spacing within the word.

WRITING: LEVEL II

This level is divided into following sections:

Section A: This section contains writing readiness tasks, and is subdivided into following sub-sections.

- | | |
|----------------------------|---------------------|
| a. Trace lines and letters | c. Copy the letters |
| b. Write on dots | d. Write from model |

Section B: This section contains word level writing tasks, and is subdivided into following sub-sections.

- | | |
|-------------------------|--------------------|
| a. Word completion task | c. One minute task |
| b. Write the word | |

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

Follow the general guidelines listed in ‘writing level I’ to carry out these activities.

- **Stimuli are given in Appendix 4.**

Writing materials:

- For all the below mentioned writing activities, use primary colour markers in the beginning stage for persons with aphasia. And then move on to writing in sketch pens, wide pencil and then regular sized pencil/pen. Follow this hierarchy.
- Only for some persons with aphasia having good pencil grasp and visual acuity, skip the initial levels and start with writing in pencil/pen itself.
- The material for writing should be white blank sheets. For all of the below mentioned activities follow the hierarchy as stated below.
- Start with blank sheets with big boxes and successively decrease the box size in decreasing levels then the blank sheets with highlighted margins followed by lined sheets and finally the blank sheets.

Section A: Writing readiness tasks

Stimulus hierarchy:

- combination of auditory, graphic and gestural (A+G+G)
- Combination of auditory and graphic (A+ G)
- Auditory (A)

Response hierarchy:

- Combination of Gestural and graphic (G+G)
- Graphic (G)

Scoring: Score the responses of person with aphasia based on the accuracy, completeness and smoothness in following the activities.

a. Trace lines and letters

Level 1: Clinician will first trace the line and ask the person with aphasia to trace. Clinician will gesture for additional cueing.

Level 2: Clinician will first trace the line and ask the person with aphasia to trace without providing gestural cue.

Level 3: Ask the person with aphasia to trace the line. No cues are provided.

For all the levels use stimuli set 1 and 2.

Stimuli: Set 1: 25 straight and curved lines

Set 2: 28 letters.

Note: stimuli given at the end of writing level-II.

b. Write on dots

Task: Ask the person with aphasia to join the dots.

Stimuli: 18 dotted letters (given at the end of writing level-II).

c. Copy the letters

Level 1: Ask the person with aphasia to write the letter inside the box by looking at the model letter kept on the table.

e.g.:



Level 2: Decrease the box size and ask the person with aphasia to copy within the box without crossing the lines.

e.g.:



Stimuli: Set 2 of sub-section (a) Trace lines and letters.

d. Write from model

Level 1: Give the model letter card/stimulus and simultaneously name it. Ask the person with aphasia to write the letter.

Level 2: Ask the person with aphasia to write the letter named by the clinician.

Stimuli: Set 2 of sub-section (a) Trace lines and letters.

Note: All the letters are not included in this activity. However clinician can be flexible to add other letters of 'Varnamaala' after the attainment of target response level.

Section B: Writing at word level

Stimulus hierarchy:

- combination of auditory, graphic and visual (A+G+V)
- Combination of auditory and visual (A+ V)
- Auditory (A)

Response hierarchy:

- Graphic (G)

Scoring: The response to be scored based on the letter legibility, letter alignment and spacing within the word.

a. **Word completion task**

Level 1: Give the word card/stimuli with the blank letter. Ask the person with aphasia to fill in the missing letter from the given choices.

Level 2: Ask the person with aphasia to complete the word by writing the missing letter.

Stimuli: Use the stimuli from section- C word completion of reading level II. However, clinician is free to increase the number of activities in this sub-section.

b. **Write the word**

Level 1: Give the picture card/stimuli with the word card/stimuli and name it aloud. Ask the person with aphasia to write the name of the picture.

Level 2: Give the picture card/stimuli and name it aloud. Ask the person with aphasia to write the word. Clinician can give auditory cues regarding the syllable formation.

Level 3: Ask the person with aphasia to write the word named by the clinician.

Stimuli: Use the stimuli from- A word identification (yes/no) of reading level II. However, clinician is free to increase the number of activities in this sub-section.

c. **One minute task**

Level 1: Ask the person with aphasia to write as many words as he knows in one minute.

Level 2: Name the category and ask the person with aphasia to write the names under it as many as possible in one minute.

WRITING: LEVEL III

This level is divided into following sections:

Section 1: Sentence level

- | | |
|------------------------|--------------------------|
| A. Sentence copying | C. Sentence verification |
| B. Sentence completion | |

Section 2: Higher writing skills

- | | |
|----------------------|--------------------------|
| A. Use punctuation | C. Write what's next |
| B. Make the question | D. Write about the topic |

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

Follow the general guidelines listed in 'writing level I' to carry out these activities.

➤ **Pictures for this level are shown in Appendix 5**

Section 1: Sentence level

A. Sentence copying

Level 1: Give the picture card and read the sentence aloud. Ask the person with aphasia to write the sentence by copying from the given card.

Stimuli:

1. EzÄÄ PÁ®Ä.
idu kAlu
2. EzÄÄ zÉÆqÀØ^aÄÄ£É.
idu doDDa mane.
3. £Á¬ÄUÀ¼ÄÄ[·]ÉÆUÀ¼ÄÄwÛ^aÉ.
nAYigaLu bogaLuttive
4. [·]ÉPÄÄÌ[°]Á®Ä PÄÄrAiÄÄÄwÛzÉ.
bekku hAlu kuDiyuttide.
5. §QÃn£Ä[°]è ðÃgÄÄ E®è.
bakITinalli nIru illa.
6. EzÄÄ ¥É£ÄÄß^aÄÄvÄÄÛ ¥ÄÄ, ÄÛPÄ.
idu pennu mattu pustaka
7. C^aÄ£ÄÄ ¥ÄvÄæ §gÉAiÄÄÄwÛzÁÝ£É.
avanu patra bareyuttiddAne.
8. UÉÆÃqÉAiÄÄ^aÉÄÄ⁻É PÁå⁻ÉAqÀgì EzÉ.
gODeya mEle kyAleMDar ide.
9. C^aÄ¼ÄÄ VqÀPÉÌ ðÃgÄÄ[°]ÁPÄÄwÛzÁÝ¼É.
avaLu giDakke nIru hAkuttiddALe.
10. ^aÄÄPÄÌ¼ÄÄ^aÄÄ¼ÉAiÄÄ[°]è bÄwæ »rzÄÄ
£ÄqÉAiÄÄÄwÛzÁÝgÉ.
makkaLu maLeyalli Catri hiDidu naDeyuttiddAre.

Note: Pictures are provided for this activity.

Level 2: Give the sentence card and read it aloud. Ask the person with aphasia to copy the sentence.

Level 3: Ask the person with aphasia to write the sentence as stated by the clinician.

Stimuli:

1. EzÄÄ n.«.
idu Ti.vi.
2. EzÄÄ °ÀÆ«£À °ÁgÀ.
idu hUvina hAra.
3. CzÄÄ PÉA¥ÄÄ PÄÄađ.
adu keMpu kurci.
4. EzÄÄ £À£Àß ZÀ¥Àà°.
idu nanna chappali.
5. ¥ÄÄ, ÀÛPÀzÀ °ÉÄÄ-É ¥É£ÄÄß EzÉ.
pustakada mEle pennu ide.
6. °ÉÆÄlçAzÀ ¢ÄgÄÄ ZÉ°èzÉ.
lOTadiMda nIru cellide.
7. C^aÀ£ÄÄ HI ^aÀiÁqÄÄwÛzÁÝ£É.
avanu UTa mADuttiddAne.
8. §ÄnÖAiÄÄ°è ^aÀiÁ«£À °ÀtÄÚUÀ¼ÄÄ E^aÉ.
buTTiyalli mAvina haNNugaLu ive.
9. C^aÀ£ÄÄ ¥sÉÆÄ¸£À°è ^aÀiÁvÀ£ÁqÄÄwÛzÁÝ£É.
avanu phOninalli mAtanADuttiddAne.
10. C^aÄÄä ^aÄÄvÄÄÛ ^aÄÄUÄÄ ¥ÁQđUÉ °ÉÆÄUÄÄwÛzÁÝgÉ.

amma mattu magu pArkige hOguttiddAre.

Note: Pictures are not provided for this activity.

B. Sentence completion

Level 1: Give the picture card and the sentence card with the missing word. Ask the person with aphasia to fill in the word from the given choices.

Level 2: Give the sentence card with the missing word and the choices. Ask the person with aphasia to fill in the appropriate word.

Stimuli: Use the sentences, picture cards/stimuli from -section A sentence copying (level I).

C. Sentence verification

Level 1: Clinician reads the sentences and asks the person with aphasia has to indicate whether the sentence is right/wrong.

Level 2: Give the sentence card and ask the person with aphasia to read. If, wrong ask him/her to write the correct form of the sentence.

Stimuli:

1. DPÀ±À ¤-É §t.
Akasha nile baNa.
2. PÀUÉAiÀÄ §tÚ PÀ¥ÀÄà.
kageya baNNa kappu.
3. «ÄÄ£ÄÄ ¤j£À° EdÄvÀÛqÉ.
mInu nirinali ijuttaDe.
4. D^aÀ£ÄÄ ,Á-ÉUÉ °ÉÆÄUÀÄvÀÛ£É.
Avanu sAlege hOguttane.
5. MzÄÄ PÉÊAiÀÄ°è LzÄÄ ·ÉgÀ®Ä.

odu kaiyalli aidu beralu.

6. $\overset{a}{\text{À}}\overset{\text{À}}{\text{V}}\overset{\text{À}}{\text{À}} \text{ e}\overset{\text{À}}{\text{g}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{§}}\overset{\text{À}}{\text{Ar}} \text{ Dz}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{w}}\overset{\text{À}}{\text{Û}}\overset{\text{À}}{\text{z}}\overset{\text{À}}{\text{É}}.$
magivu jArubaMDi Aduttide.
7. $\text{D} \overset{\text{À}}{\text{Á}}\overset{\text{À}}{\text{V}}\overset{\text{À}}{\text{£}}\overset{\text{À}}{\text{À}} \overset{\text{À}}{\text{¥}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{v}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{Û}}\overset{\text{À}}{\text{P}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{U}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{¼}}\overset{\text{À}}{\text{À}} \text{ E}\overset{\text{À}}{\text{a}}\overset{\text{À}}{\text{É}}.$
A bYAginali puttakagaLu ive.
8. $\text{D} \text{ U}\overset{\text{À}}{\text{É}}\overset{\text{À}}{\text{q}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{z}}\overset{\text{À}}{\text{À}} \text{ v}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{Á}} \text{ P}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{U}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{¼}}\overset{\text{À}}{\text{À}} \text{ E}\overset{\text{À}}{\text{a}}\overset{\text{À}}{\text{É}}.$
A geDada tuMbA kayigaLu ive.
9. $\text{C}\overset{\text{À}}{\text{¥}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{à}}\overset{\text{À}}{\text{«}}\overset{\text{À}}{\text{U}}\overset{\text{À}}{\text{É}} \overset{\text{À}}{\text{£}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{i}}\overset{\text{À}}{\text{É}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{z}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{g}}\overset{\text{À}}{\text{É}} \text{ v}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{Á}} \text{ !}\overset{\text{À}}{\text{Ã}}\overset{\text{À}}{\text{w}}.$
appuvige nayiyeMdare tubA pIti.
10. $\text{C}\overset{\text{À}}{\text{¼}}\overset{\text{À}}{\text{À}} \overset{\text{À}}{\text{§}}\overset{\text{À}}{\text{m}}\overset{\text{À}}{\text{É}}\overset{\text{À}}{\text{Ö}}\overset{\text{À}}{\text{U}}\overset{\text{À}}{\text{É}}\overset{\text{À}}{\text{Æ}}\overset{\text{À}}{\text{®}}\overset{\text{À}}{\text{£}}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{ß}} \text{ F}\overset{\text{À}}{\text{¹}}\overset{\text{À}}{\text{Û}}\overset{\text{À}}{\text{ç}} \overset{\text{À}}{\text{a}}\overset{\text{À}}{\text{i}}\overset{\text{À}}{\text{Á}}\overset{\text{À}}{\text{r}} \text{ Eq}\overset{\text{À}}{\text{À}}\overset{\text{À}}{\text{w}}\overset{\text{À}}{\text{Û}}\overset{\text{À}}{\text{z}}\overset{\text{À}}{\text{¼}}\overset{\text{À}}{\text{É}}.$
avaLu baTTegolannu Istri mADi iDuttidALe.

Note: Pictures are provided for this activity.

Section 2: Higher writing skills

A. Use punctuation

Task: Give the sentence card. Ask the person with aphasia to mark the punctuations appropriately in the sentence.

Stimuli:

1. CzÀÄ gÀ,ÉÛ adu raste
2. EzÀÄ K£ÀÄ idu Enu
3. VqÀzÀ°è KꝛzÉ giDadalli Enide
4. DPÁ±À ꝛÃ° EzÉ AkAsha nIli ide
5. $\overset{a}{\text{Á}}\overset{\text{À}}{\text{i}} \text{ JAx}\overset{\text{À}}{\text{¼}}\overset{\text{À}}{\text{É}}$ vhA eMthA maLe
6. bÉÃ §,ÀÄì $\overset{\text{À}}{\text{¹}}\overset{\text{À}}{\text{U}}\overset{\text{À}}{\text{°}}\overset{\text{À}}{\text{®}}\overset{\text{À}}{\text{è}}$ CE bassu sigalilla

7. CAIÉÆåÃ C^aÀ£ÄÄ eÁj ©zÀÝ£ÄÄ ayyO avanu jAri biddanu
8. C^aÀ£ÄÄ C^aÀ½UÉ ¥ÄÄ, ÀÛPÀ PÉÆqÄÄwÛzÁÝ£É avanu
avaLige pustaka koDuttiddAne
9. EzÄÄ nÃ.«. UÀrAiÀiÁgÀ ^aÄÄvÄÄÛ ¥sÁå£ÄÄ idu TI.vi.
gaDiyAra mattu phyAnu
10. C^oè ±ÀlÄð ¥ÁåAlÄ ZÀ¥Äà^o E^aÉ alli sharTu pyAMTu
chappali ive

Note: Pictures are not provided for this activity.

B. Make the question

Level 1: Keep the sentence card and ask the person with aphasia to pick the right question card from the given choices.

Level 3: Ask the person with aphasia to make a question for the given sentence.

Stimuli:

1. EzÄÄ ..Á^aÄÄl. idu bAvuTa.
EzÄÄ K£ÄÄ? idu Enu?
EzÄÄ J^oè? idu elli?
2. EzÄÄ PÀ£ÄßqÀPÀ. idu kannuDaka.
EzÄÄ K£ÄÄ? idu Enu?
EzÄÄ J^oè? idu elli?
3. ^aÉÄÄff£À ^aÉÄÄ-É ¥sÁå£ÄÄ EzÉ. mEjina mEle phyAnu ide.
^aÉÄÄff£À ^aÉÄÄ-É K^ozÉ? mEjina mEle Enide?
^aÉÄÄff£À ^aÉÄÄ-É K^oèzÉ? mEjina mEle Ellide?
4. OµÀçü QIQ ^aÉÄÄ-É EzÉ. auShadhi kiTaki mEle ide.
OµÀçü J^oèzÉ? auShadhi ellide?
OµÀçü QIQ AiÀiÁQzÉ? auShadhi kiTaki yAkide?
5. C^aÀ£À PÁgÄÄ PÉA¥ÄÄ §tÚzÄÄÝ. avana kAru keMpu
baNNaddu.

C^aÀ£À PÁgÀÄ AiÀiÁ^aÀ §tÚzÀÄÝ? avana kAru yAva baNNaddu?
 C^aÀ£À PÁgÀÄ J^oè §tÚzÀÄÝ? avana kAru elli baNNaddu?

6. ¥ÀÄ, ÀÛPÀzÀ M¼ÀUÉ ¥É£ÀÄß EzÉ. pustakada oLage
 pennu ide.
 ¥ÀÄ, ÀÛPÀzÀ M¼ÀUÉ J^oè EzÉ? pustakada oLage elli ide?
 ¥ÀÄ, ÀÛPÀzÀ M¼ÀUÉ K£ÀÄ EzÉ? pustakada oLage Enu ide?
7. C^aÀ£ÀÄ ^aÀÄgÀ PÀrAiÀÄÄwÛzÁÝ£É. avanu mara
 kaDiyuttiddAne.
 C^aÀ£ÀÄ K£ÀÄ ^aÀiÁqÀÄwÛzÁÝ£É? avanu Enu
 mADuttiddAne?
 C^aÀ£ÀÄ AiÀiÁPÉ PÀrAiÀÄÄwÛzÁÝ£É? avanu yAke
 kaDiyuttiddAne?
8. C^aÀgÀÄ UÀÄA¥ÁV PÀÄ½wzÁÝgÉ. avaru guMpAgi
 kuLitiddAre.
 C^aÀgÀÄ AiÀiÁPÉ PÀÄ½wzÁÝgÉ? avaru yAke kuLitiddAre?
 C^aÀgÀÄ °ÉÄUÉ PÀÄ½wzÁÝgÉ? avaru hEge kuLitiddAre?
9. “ÁV® °ÀwÛgÀ UÀAqÀ, ÄÄ ¢AwzÁÝgÉ. bAgila hattira gaMDasu
 niMtiddAre.
 “ÁV® °ÀwÛgÀ °ÉÄUÉ ¢AwzÁÝgÉ? bAgila hattira hEge niMtiddAre?
 “ÁV® °ÀwÛgÀ AiÀiÁgÀÄ ¢AwzÁÝgÉ? bAgila hattira yAru
 niMtiddAre?
10. C^aÀ£ÀÄ eÉÆÄgÀÄ ^aÀÄ¼É¬ÄAzÁV bÀwæ »rçzÁÝ£É.
 avanu jOru maLeyiMdAgi Catri hiDididdAne.
 C^aÀ£ÀÄ KPÉ bÀwæ »rçzÁÝ£É? avanu Eke Catri hiDididdAne?
 C^aÀ£ÀÄ °ÉÄUÉ bÀwæ »rçzÁÝ£É? avanu hEge Catri hiDididdAne?

Note: Pictures are not provided for this activity.

C. Write what's next

Task: Give the sequential picture cards/stimuli with written sentence for the first picture.

Ask the person with aphasia to see the second picture and write a sentence about it.

Stimuli: Use the stimuli from –section B, tenses from reading level II and from –section C, sentence sequencing from reading level III.

D. Write about

Task: Clinician will give a topic to write about to the person with aphasia. Topic will be selected based on the interest of person with aphasia

ARITHMETIC

LEVEL I: (FUNCTIONAL CALCULATION)

Following are the two sections:

Section 1:

- A. Identification of numbers
- B. Identification of mathematical signs
- C. Concept of zero and counting

Section 2:

- A. Geometric shapes
- B. Concept of time
- C. Concept of currency of different denomination
- D. Concept of measurements

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses.

➤ **Pictures for this level are shown in Appendix 6**

Stimulus mode hierarchy:

- Combination of auditory, visual and graphic (A+V+G)
- Combination of auditory and graphic (A+G)
- Graphic (A)

Response mode hierarchy

- Pointing (P)
- Verbal and Graphic (V+G)

Section I

A. Identification of numbers

Task (a)

Level 1: Give the number card/stimulus while saying the number aloud. Ask the person with aphasia to point to the respective picture which contains the objects in same number.

Level 2: Give the number card/stimulus and ask the person with aphasia to point to the card which has objects in same number.

Level 3: Give the number and ask the person with aphasia to name it aloud.

Stimuli: Number card/stimulus from 1 to 20.

Note: Pictures are provided for this activity.

Task (b)

Level 1: Give the number card/stimulus along with the number card/stimulus in words. Say the word loudly and ask the person with aphasia to point to the same number out of four choices of number card/stimulus on the table.

Level 2: Give the number card/stimulus. Ask the person with aphasia to point to the word card/stimuli of the same number.

Level 3: Tell a number. Ask the person with aphasia to write the number and say it aloud.

Stimuli:

- | | |
|--|--------------------------------------|
| 1. MAzÀÄ oMdu | 11. °À£ÉÆBAzÀÄ hannoMdu |
| 2. JgÀqÀÄ eraDu | 12. °À£ÉBgÀqÀÄ hanneradu |
| 3. ^a ÀÄÆgÀÄ mUru | 13. °Àç ^a ÀÄÆgÀÄ hadimUru |
| 4. £Á®ÄÌ nAlku | 14. °Àç£Á®ÄÌ hadinAlku |
| 5. LzÀÄ aidu | 15. °Àç£ÉÊzÀÄ hadinaidu |
| 6. DgÀÄ Aru | 16. °Àç£ÁgÀÄ hadinAru |
| 7. K¼ÄÄ ELu
hadinELu | 17. °Àç£ÉÄ¼ÄÄ |
| 8. JAIÄ eMTu | 18. °Àç£ÉAIÄ hadineMTu |
| 9. MA ^ˆ sÀvÀÄÛ hattoMbhattu
oMbhattu | 19. °ÀvÉÆÛA ^ˆ sÀvÀÄÛ |
| 10. °ÀvÀÄÛ hattu | 20. E¥ÀàvÀÄÛ ippattu |

Note: Pictures are not provided for this activity.

Task (c)

Level 1: Give the number card/stimulus along with the number card/stimulus in words. Say the word loudly and ask the person with aphasia to point to the same number out of four choices of number card/stimuluss on the table.

Level 2: Give the number card/stimulus. Ask the person with aphasia to point to the word card/stimuli of the same number.

Level 3: Tell a number. Ask the person with aphasia to write the number and say it aloud.

Stimuli:

1. **100** £ÀÆgÀÄ
 nUru
2. **120** £ÀÆj¥ÀàvÀÄÛ
 nUrrippattu
3. **250** E£ÀÆßgÉÊ^aÀvÀÄÛ
 innUraivattu
4. **280** E£ÀÆßgÉA^ˆsÀvÀÄÛ
 innUreMbhattu
5. **315** ^aÀÄÄ£ÀÆßgÀ °Àç£ÉÊzÀÄ
 munnUra hadinaidu
6. **397** ^aÀÄÄ£ÀÆßgÀ vÉÆA^ˆsÀvÉÛÄ¼ÀÄ
 munnUra toMbhattELu
7. **440** £Á£ÀÆgÀ £À®^aÀvÉÆÛAzÀÄ
 nAnUra nalavattoMdu
8. **488** £Á£ÀÆgÀ JA^ˆsÀvÉÛAIA
 nAnUra eMbatteMTu
9. **661** DgÀÄ£ÀÆgÀ CgÀ^aÀvÉÆÛAzÀÄ
 ArunUra aravattoMdu
10. **999** MA^ˆsÉÊ£ÀÆgÀ vÉÆA^ˆsÀvÀÄÛ
 oMbhainUra toMbhattu
11. **1015** MAzÀÄ ,Á«gÀzÀ °Àç£ÉÊzÀÄ
 oMdu sAvirada hadinaidu
12. **2022** JgÀqÀÄ ,Á«gÀzÀ E¥ÀàvÉÛgÀqÀÄ
 eraDu sAvirada ippatteraDu

13. **4203** £Á®ÄÌ ,Á«gÀzÀ E£ÀÆßgÀ ºÄÄÆgÀÄ
nAlku sAvirada innUra mUru
14. **8304** JAlÄ ,Á«gÀzÀ ºÄÄÄ£ÀÆßgÀ £Á®ÄÌ
eMTu sAvirada munnUra nAlku
15. **10,112** °ÀvÄÄÛ ,Á«gÀzÀ £ÀÆgÀ °À£ÉßgÀqÄÄ
hattu sAvirada nUra hanneradu
16. **25,710** EÿÀàvÉÛöÊzÄÄ ,Á«gÀzÀ K¼ÄÄ£ÀÆgÀ
°ÀvÄÄÛ
ippattaidu sAvirada ELunUra hattu
17. **28,518** EÿÀàvÉÛAlÄ ,Á«gÀzÀ L£ÀÆgÀ °Àç£ÉAlÄ
ippatteMTu sAvirada ainUra hadineMTu
18. **50,341** LªÀvÄÄÛ ,Á«gÀzÀ ºÄÄÄ£ÀÆßgÀ
£À®ªÀvÉÛÆÛAzÄÄ
aivattu sAvirada munnUra nalavattoMdu
19. **1,15,105** MAzÄÄ ®PÀë °Àç£ÉÊzÄÄ ,Á«gÀzÀ
£ÀÆgÁLzÄÄ
oMdu lakSha hadinaidu sAvirada nUrAaidu
20. **8,71,916** JAlÄ ®PÀë JÿÀàvÉÛÆÛAzÄÄ ,Á«gÀzÀ
MA·sÉÊ£ÀÆgÀ °Àç£ÁgÄÄ
eMTu lakSha eppattoMdu sAvirada oMbhainUra hadinAru

Note: Pictures are not provided for this activity.

B. Identification of mathematical signs

Level 1: Keep four four cards/stimuli depicting mathematical signs on the table. Ask the person with aphasia to point to the sign matching with the one in clinician's hand. Clinician should name the sign as well.

Level 2: Ask the person with aphasia to name the sign as clinician points to the card depicting the mathematical sign.

Level 3: Ask the person with aphasia to write the sign and name its use, which is named by the clinician.

Stimuli:

Set 1:

- | | | |
|-----------------------|---------|---|
| 1. PÀÆr,ÄÄ | kUDisu | + |
| 2. PÀ¼É | kale | - |
| 3. UÄÄtÄ,ÄÄ | guNisu | × |
| 4. ¨sÁV,ÄÄ | bhAgisu | / |
| 5. ,Ä ^a ÄÄ | sama | = |

Set 2:

- | | | |
|--|-----------|---|
| 1. aPÀÌzÄÄ | cikkadu | < |
| 2. zÉÆqÀØzÄÄ | doDDadu | > |
| 3. ±ÉÃPÀqÁ | shEkaDA | % |
| 4. ,Ä ^a ÄÄ ^a Ä®è | samavalla | ≠ |

Note: Pictures are not provided for this activity.

C. Concept of zero and counting

Level 1: Give numbers and read them aloud. Ask the person with aphasia to apply the mathematical operation and mark the correct answer out of choices given.

Level 2: Give the written numbers and ask the person with aphasia to write the answer. No choices are given in this level.

Level 3: Ask the person with aphasia to write the answer and say it aloud.

Stimuli:

1. $0+0=$ _____ (10, 0, 2)
2. $0+1=$ _____ (1, 0, 10)
3. $5+0=$ _____ (6, 5, 50)
4. $10+0=$ _____ (0, 11, 10)
5. $5-0=$ _____ (5, 6, 0)
6. $0-0=$ _____ (0, 2, 00)
7. $12-0=$ _____ (0, 12, 11)
8. $0\times 0=$ _____ (0, 10, 00)
9. $1\times 0=$ _____ (0, 1, 10)
10. $0\times 4=$ _____ (40, 4, 00)
11. $10\times 0=$ _____ (10, 0, 100)
12. $1/0=$ _____ (10, 1, 0.0)
13. $6/0=$ _____ (3, 6, 60)
14. $11/0=$ _____ (10, 11, 110)
15. $30/0=$ _____ (300, 30, 00)

Note: Pictures are not provided for this activity. However, clinician can use pictures if necessary.

Counting task: Use the number and picture cards/stimuli of task (a) under (B) Identification of numbers.

Section II

A. Geometric shapes

Level 1: Keep four shapes on the table. Ask the person with aphasia to point to the shape matching with the one in clinician's hand. Clinician should name the shape as well.

Level 2: Ask the person with aphasia to name the shape card which is pointed by the clinician.

Level 3: Ask the person with aphasia to draw the shape which is named by the clinician.

Stimuli:

- | | | | | | |
|----|--------------------|--------------|----|----------|-----------------|
| 1. | ^a ÀÈvÀÛ | vRutta | 6. | ZËPÀ | couka |
| 2. | CzsÀð | ardha caMdra | 7. | £ÀPÀëvÀæ | nakShatra |
| | ZÀAzÀæ | | | | |
| 3. | wæPÉÆÃ£À | trikOna | 8. | ZÀÄPÉÏ | / cukke / biMdu |
| | | | | ©AzÀÄ | |
| 4. | DAiÀÄvÀ | Ayata | 9. | UÉgÉ | / gere / rEkhe |
| | | | | gÉÃSÉ | |
| 5. | ˘Át | bANa | | | |

Note: Pictures are provided for this activity.

B. Concept of time

a. Forenoon/afternoon

Level 1: Ask the person with aphasia to indicate yes/no for the following questions.

Level 2: If no, ask the person with aphasia to answer correctly for the following questions.

Stimuli:

1. $\alpha \tilde{A}^a \tilde{A} \tilde{A} \cdot \acute{E} \frac{1}{4} \tilde{A} \tilde{U} \tilde{E} \hat{I} \circ \tilde{A} \textcircled{A} \tilde{e} d \tilde{A} \tilde{O} w \hat{U} \tilde{A} g \acute{A}?$
nIvu beLagge hallujuttIrA?
2. $\phi \text{£} \tilde{A} \text{¥} \tilde{A} w \acute{e} P \acute{E} g \acute{A} w \acute{e} N z \tilde{A} \tilde{A} v \acute{A} \hat{U} g \acute{A}?$
dinapatrike rAtri OduttArA?
3. $\alpha \tilde{A}^a \tilde{A} \tilde{A} \tilde{A} \tilde{A} e \acute{E} n \tilde{A} P \tilde{A} \tilde{A} r \tilde{A} i \tilde{A} \tilde{A} \tilde{A} w \hat{U} \tilde{A} g \acute{A}?$
nIvu saMje TI kuDiyuttIrA?
4. $\alpha \tilde{A}^a \tilde{A} \tilde{A} \tilde{A} \cdot \acute{E} \frac{1}{4} \tilde{A} \tilde{U} \tilde{E} \hat{I} \alpha z \acute{E} \acute{e}^a \tilde{A} i \acute{A} q \tilde{A} \tilde{A} w \hat{U} \tilde{A} g \acute{A}?$
nIvu beLagge nidre mADuttIrA?
5. $\tilde{A} \tilde{E} \tilde{A} i \tilde{A} \tilde{A} \tilde{d} \tilde{A} \tilde{A} e \acute{E} \circ \tilde{A} \tilde{A} i \tilde{A} \tilde{O} v \acute{A} \hat{U} \text{£} \acute{A}?$
sUrya saMje huTTuttAnA?
6. $^a \tilde{A} \tilde{A} z \acute{A} \tilde{a} \circ \tilde{A} \beta Z \tilde{A} \tilde{A} \phi g \tilde{A} P \acute{A} t \tilde{A} v \acute{A} \hat{U} \text{£} \acute{A}?$
madyAhna caMdira kANuttAnA?
7. $g \acute{A} w \acute{e} P \tilde{A} v \tilde{A} \hat{U}^- \acute{A} U \tilde{A} \tilde{A} v \tilde{A} \hat{U} z \acute{A}?$
rAtri kattalAguttadA?
8. $\circ \tilde{A} U \tilde{A} \textcircled{A} \tilde{A} D P \acute{A} \pm \tilde{A} z \tilde{A} \tilde{A} \tilde{e} \text{£} \tilde{A} P \tilde{A} \tilde{e} v \tilde{A} \tilde{e} P \acute{A} t \tilde{A} v \tilde{A} \hat{U}^a \acute{A}?$
hagalu AkAshadalli nakShatra kANuttavA?
9. $\tilde{A} \tilde{E} \tilde{A} i \tilde{A} \tilde{A} \tilde{d} \circ \tilde{A} \tilde{A} i \tilde{A} \tilde{O}^a \tilde{A}^a \tilde{A} \tilde{A} \tilde{A} z \acute{E} P \tilde{A} v \tilde{A} \hat{U}^\circ g \tilde{A} \tilde{A} v \tilde{A} \hat{U} z \acute{A}?$
sUrya huTTuva muMce kattaliruttadA?
10. $\alpha \tilde{A}^a \tilde{A} \tilde{A} \tilde{A}^a \acute{A} \tilde{A} i \tilde{A} \tilde{A} \tilde{A} \ll \acute{A} g \tilde{A} P \acute{E} \tilde{I} / ^a \acute{A} Q \tilde{A} U i U \acute{E}^a \tilde{A} \tilde{A} z s \tilde{A} \tilde{a} g \acute{A} w \acute{e}$
 $\circ \acute{E} \tilde{A} \tilde{A} U \tilde{A} \tilde{A} w \hat{U} \tilde{A} g \acute{A}?$
nIvu vAyuvihArakke/vAkiMg ge madhyarAtri hOguttIrA?

Note: Pictures are not provided for this activity.

b. Clock times

Level 1: Show the clock drawing and give four time options. Ask the person with aphasia to point to the correct time.

Level 2: Give the clock diagram and ask the person with aphasia to draw the needles for the time requested by the clinician.

Stimuli: Clock drawings for,

- | | | | | | |
|----|------------|----|---------|----|-------------|
| 1. | 6 A.M. | 4. | 5 P. M. | 7. | 1 P. M. |
| 2. | 9 A. M. | 5. | 7 P. M. | 8. | 10.10 P. M. |
| 3. | 4.45 P. M. | | | | |

Note 1: Pictures are included for this activity.

Note 2: Clinician can extend this activity to train the person with aphasia to see the clock timings which are important for the individual like, bus time, doctor’s appointment time, therapy session timings, medication timing and so on.

C. Concept of currency of different denomination

Level 1: Ask the person with aphasia to point to the picture of currency which is named by the clinician.

Level 2: Ask the person with aphasia to name the picture of currency which is pointed by the clinician.

Stimuli:

- | | | |
|----|---------------------------------|---------------------|
| 1. | L ^a ÀvÀÄÛ ¥ÉÊ,É £Átå | aivattu paise nANya |
| 2. | MAZÀÄ gÀÄ¥Á¬Ä £Átå | oMdu rupAyi nANya |

3. JgÀqÀÄ gÀÄÏÁ¬Ä £Átå eraDu rupAyi nANya
4. LzÀÄ gÀÄÏÁ¬Ä £Átå & £ÉÆÃIÄ aidu rupAyi nANya & nOTu
5. °ÀvÀÄÛ gÀÄÏÁ¬Ä £Átå & £ÉÆÃIÄ hattu rupAyi nANya & nOTu
6. EÏÀàvÀÄÛ gÀÄÏÁ¬Ä £ÉÆÃIÄ ippattu rupAyi nOTu
7. L^avÀÄÛ gÀÄÏÁ¬Ä £ÉÆÃIÄ aivattu rupAyi nOTu
8. £ÀÆgÀÄ gÀÄÏÁ¬Ä £ÉÆÃIÄ nUru rupAyi nOTu
9. L£ÀÆgÀÄ gÀÄÏÁ¬Ä £ÉÆÃIÄ ainUru rupAyi nOTu
10. „Á«gÀ gÀÄÏÁ¬Ä £ÉÆÃIÄ sAvira rupAyi nOTu

Note: Pictures are provided for this activity.

D. Concept of measurements

Level 1: Ask the person with aphasia to indicate yes/no for the following questions.

Level 2: If no, ask the person with aphasia to answer correctly for the following questions.

Stimuli:

1. CQÌAiÀÄ£ÀÄß PÉ. f. -ÉPÀÌzÀ°è vÀÆUÀÄvÁÛgÉ.
akkiyannu ke. ji. lekkadalli tUguttAre.
2. °Á®£ÀÄß °ÀÄÆmÉ -ÉPÀÌzÀ°è C¼ÉAiÀÄÄvÁÛgÉ.
hAlannu mUTe lekkadalli aLeyuttAre.
3. MAzÀÄ PÉ. f. LzÀÄ PÉ. f. VAvÀ PÀr^aÉÄ.
oMdu ke. ji. aidu ke. ji. giMta kaDime.
4. °Á®£ÀÄß °Ãlj£À°è C¼ÉAiÀÄÄvÁÛgÉ.
hAlannu lITarinalli aLeyuttAre.
5. JuÉÚAiÀÄ£ÀÄß °Ãlj£À°è C¼ÉAiÀÄÄvÁÛgÉ.

eNNeyannu lITarinalli aLeyuttAre.

6. JvÀÛgÀªÀ£ÀÄß PÉ. f AiÀÄ°è C¼ÉAiÀÄÄvÁÛgÉ.
ettaravannu ke. ji yalli aLeyuttAre.
7. CzsÀð °ÄlgiªÉÆ,ÀgÀÄ ¥ÁâPÉmi £À°è ¹UÀÄvÀÛzÉ.
ardha lITar mosaru pyAkeT nalli siguttade.
8. UÁå,ï ¹°AqÀgi vÀÆPÀ PÉ. f. ¯ÉPÀÏzÀ°è EgÀÄvÀÛzÉ.
gyAs siliMDar tUka ke. ji. lekkadalli iruttade.
9. ¯ÉAUÀ¼ÀÆgÀÄªÉÄÊ,ÀÆjªAzÀ 140 Q.«ÄÄ
zÀÆgÀzÀ°èzÉ.
beMgaLUru maisUriniMda 140 ki.mI dUradallide.
10. ¯ÄªÀÄ 10 ,ÉA. «ÄÄ. GzÀÝ EçÝÄgÀ.
nIvu 10 seM. mI. udda iddIra.
11. 100 ,ÉA. «ÄÄ. ,ÉÄjzÀgÉ MAzÀÄ «ÄÄlgi DUÀÄvÀÛzÉ.
100 seM. mI. sEridare oMdu mITar Aguttade.
12. Q¯ÉÆÄ«ÄÄlgi «ÄÄlgi VAvÀ zÉÆqÀØªÀiÁ¥À£À/C¼ÀvÉ.
kilOmITar mITar giMta doDDa mApana/aLate.
13. D¼ÀªÀ£ÀÄß «ÄÄlgi/Q¯ÉÆÄ«ÄÄlgi £À°è
C¼ÉAiÀÄÄvÁÛgÉ.
ALavannu mITar/kilOmITar nalli aLeyuttAre.
14. MAzÀÄ PÉ. f. °ÀwÛAiÀÄÄ MAzÀÄ PÉ. f. ¯ÉÄ¼ÉVAvÀ
°ÀUÀÄgÀ.
oMdu ke. ji. hattiyu oMdu ke. ji. bELegiMta hagura.
15. 500 «Ä° °Älgi VAvÀ 2 °Älgi ¯Á¹°AiÀÄ°è °ÉZÄÄÑ ¯ÄgÀÄ
EgÀÄvÀÛzÉ.
500 mili lITar giMta 2 lITar bATaliyalli heccu nIru iruttade.

Note: Pictures are not provided for this activity.

LEVEL II: ADVANCED CALCULATIONS

This level is divided into following sections:

A. Addition

C. Multiplication

B. Subtraction

D. Division

Scoring

- 0 = No response/ incorrect response/ unintelligible response
- 1 = Partially correct and intelligible response
- 2 = Fully correct intelligible response

Progress criteria: 75%

Strategies to use: Appropriate strategies can be used (refer pages 17-18). These should be used to strengthen the responses. Clinician is free to use other strategies which are more specific to mathematical concepts.

Note: Pictures are not provided.

Stimulus hierarchy:

- Combination of auditory and graphic (A+G)
- Graphic (A)

Response hierarchy:

- Graphic (G)
- Combination of graphic and verbal (V)

A. Addition

This section contains following subsections:

- a. Single digit addition
- b. Double digit addition
- c. Multiple digit addition

All the above sub-sections follow three levels.

Level 1: Give numbers and read them aloud. Ask the person with aphasia to add those numbers and mark the correct answer out of choices given.

Level 2: Give the written numbers and ask the person with aphasia to add and write the number. No choices are given in this level.

Level 3: Ask the person with aphasia to write the answer and say it aloud.

Stimuli:

a. Single digit addition

Set 1:

1. $1+1 = \underline{\quad}$ (2, 3, 1)
2. $1+2 = \underline{\quad}$ (3, 2, 1)
3. $2+2 = \underline{\quad}$ (5, 3, 4)
4. $2+3 = \underline{\quad}$ (5, 2, 6)

5. $3+1 = \underline{\quad}$ (3, 1, 4)
6. $4+4 = \underline{\quad}$ (7, 6, 8)
7. $7+2 = \underline{\quad}$ (8, 9, 7)
8. $6+2 = \underline{\quad}$ (7, 8, 4)
9. $4+5 = \underline{\quad}$ (9, 5, 1)
10. $5+5 = \underline{\quad}$ (10, 15, 5)

Set 2:

1. $7+3 = \underline{\quad}$ (13, 10, 12)
2. $9+2 = \underline{\quad}$ (14, 11, 7)
3. $6+6 = \underline{\quad}$ (16, 12, 18)
4. $7+8 = \underline{\quad}$ (15, 17, 15)
5. $4+9 = \underline{\quad}$ (13, 14, 11)
6. $7+7 = \underline{\quad}$ (15, 14, 16)
7. $6+8 = \underline{\quad}$ (18, 14, 16)
8. $8+8 = \underline{\quad}$ (17, 16, 18)
9. $9+9 = \underline{\quad}$ (19, 18, 20)
10. $9+10 = \underline{\quad}$ (20, 19, 9)

b. Double digit addition

Set 1:

1. $10+10 = \underline{\quad}$ (20, 0, 16)
2. $11+11 = \underline{\quad}$ (32, 22, 12)
3. $14+15 = \underline{\quad}$ (18, 19, 21)
4. $11+20 = \underline{\quad}$ (41, 31, 21)
5. $13+16 = \underline{\quad}$ (31, 29, 28)
6. $17+22 = \underline{\quad}$ (39, 71, 41)
7. $20+24 = \underline{\quad}$ (44, 54, 42)

8. $40+45 = \underline{\hspace{2cm}}$ (90, 85, 88)
9. $30+40 = \underline{\hspace{2cm}}$ (70, 60, 15)
10. $20+39 = \underline{\hspace{2cm}}$ (60, 59, 19)

Set 2:

1. $14+16 = \underline{\hspace{2cm}}$ (20, 30, 24)
2. $15+19 = \underline{\hspace{2cm}}$ (52, 34, 29)
3. $19+23 = \underline{\hspace{2cm}}$ (43, 42, 59)
4. $26+16 = \underline{\hspace{2cm}}$ (42, 28, 38)
5. $12+31 = \underline{\hspace{2cm}}$ (29, 38, 43)
6. $34+17 = \underline{\hspace{2cm}}$ (41, 51, 48)
7. $69+18 = \underline{\hspace{2cm}}$ (78, 87, 68)
8. $55+27 = \underline{\hspace{2cm}}$ (87, 82, 77)
9. $72+19 = \underline{\hspace{2cm}}$ (89, 91, 101)
10. $66+29 = \underline{\hspace{2cm}}$ (85, 95, 105)

Set 3:

1. $50+50 = \underline{\hspace{2cm}}$ (100, 104, 140)
2. $46+66 = \underline{\hspace{2cm}}$ (113, 121, 112)
3. $39+85 = \underline{\hspace{2cm}}$ (142, 124, 132)
4. $70+92 = \underline{\hspace{2cm}}$ (192, 162, 709)
5. $97+79 = \underline{\hspace{2cm}}$ (197, 792, 176)
6. $82+87 = \underline{\hspace{2cm}}$ (816, 169, 168)
7. $59+96 = \underline{\hspace{2cm}}$ (166, 155, 199)
8. $88+77 = \underline{\hspace{2cm}}$ (815, 165, 728)
9. $91+89 = \underline{\hspace{2cm}}$ (208, 180, 190)
10. $99+108 = \underline{\hspace{2cm}}$ (207, 199, 919)

c. Multiple digit addition

1. $999+19 = \underline{\hspace{2cm}}$ (1018, 1000, 1118)
2. $439+672 = \underline{\hspace{2cm}}$ (1111, 1001, 1100)
3. $588+755 = \underline{\hspace{2cm}}$ (1313, 1333, 1343)

4. $866+739=$ _____ (1605, 1506, 1806)
5. $1016+9=$ _____ (1005, 1125, 1025)
6. $1005+28=$ _____ (1033, 1088, 1003)
7. $1000+132=$ _____ (1213, 1132, 1032)
8. $2032+438=$ _____ (2470, 2740, 2027)
9. $3209+500=$ _____ (3709, 3700, 3079)
10. $12,000+6=$ _____ (1206, 12006, 12600)

B. Subtraction

This section contains following levels:

- a. Single digit subtraction
- b. Double digit subtraction
- c. Multiple digit subtraction

Level 1: Give numbers and read them aloud. Ask the person with aphasia to minus those numbers and mark the correct answer out of choices given.

Level 2: Give the written numbers and ask the person with aphasia to subtract and write the number. No choices are given in this level.

Level 3: Ask the person with aphasia to write the answer and say it aloud.

Stimuli:

a. Single digit subtraction

Set 1:

1. $2-1=$ _____ (2, 1, 3)
2. $3-2=$ _____ (1, 5, 4)
3. $4-2=$ _____ (6, 2, 3)
4. $7-4=$ _____ (4, 3, 6)

5. $8-6=$ _____ (3, 2, 9)
6. $9-7=$ _____ (10, 2, 4)
7. $7-6=$ _____ (11, 1, 9)
8. $6-3=$ _____ (9, 3, 6)
9. $9-9=$ _____ (9, 0, 10)
10. $9-4=$ _____ (13, 5, 11)

Set 2:

1. $14-4=$ _____ (18, 10, 8)
2. $12-6=$ _____ (18, 16, 6)
3. $15-9=$ _____ (6, 19, 25)
4. $17-3=$ _____ (14, 4, 18)
5. $32-1=$ _____ (22, 31, 30)
6. $21-9=$ _____ (31, 12, 21)
7. $24-4=$ _____ (20, 18, 28)
8. $22-7=$ _____ (15, 17, 29)
9. $23-8=$ _____ (31, 27, 15)
10. $38-9=$ _____ (19, 29, 20)

b. Double digit subtraction

Set 1:

1. $24-12=$ _____ (20, 12, 8)
2. $48-16=$ _____ (27, 32, 16)
3. $56-23=$ _____ (63, 31, 33)
4. $77-55=$ _____ (22, 33, 11)
5. $89-69=$ _____ (29, 20, 10)
6. $72-61=$ _____ (12, 11, 27)
7. $99-33=$ _____ (33, 99, 66)
8. $65-32=$ _____ (33, 25, 37)
9. $82-21=$ _____ (38, 61, 16)

10. $67-12=$ _____ (17, 55, 50)

Set 2:

1. $74-39=$ _____ (35, 30, 45)

2. $81-23=$ _____ (25, 58, 38)

3. $90-45=$ _____ (46, 45, 50)

4. $46-37=$ _____ (9, 8, 11)

5. $56-29=$ _____ (25, 27, 31)

6. $61-57=$ _____ (14, 4, 6)

7. $25-18=$ _____ (12, 9, 7)

8. $51-19=$ _____ (22, 12, 32)

9. $32-17=$ _____ (12, 19, 15)

10. $87-68=$ _____ (20, 19, 29)

c. Multiple digit subtraction

1. $132-2=$ _____ (120, 134, 130)

2. $144-4=$ _____ (140, 141, 148)

3. $279-8=$ _____ (278, 271, 239)

4. $712-12=$ _____ (172, 700, 124)

5. $753-7=$ _____ (735, 746, 757)

6. $634-22=$ _____ (612, 622, 633)

7. $765-31=$ _____ (734, 743, 751)

8. $832-19=$ _____ (813, 831, 881)

9. $754-88=$ _____ (656, 648, 666)

10. $888-333=$ _____ (833, 555, 585)

11. $987-799=$ _____ (188, 900, 378)

12. $931-859=$ _____ (72, 35, 120)

13. $1023-3=$ _____ (1000, 1020, 123)

14. $2083-7=$ _____ (2076, 2088, 208)

15. $3456-23=$ _____ (3433, 3333, 3344)
16. $5584-262=$ _____ (5322, 5533, 5232)
17. $9878-8999=$ _____ (778, 798, 879)
18. $13567-44=$ _____ (12341, 12233, 13523)
19. $13567-199=$ _____ (12268, 12368, 13368)
20. $18089-17074=$ _____ (1015, 1005, 1808)

C. Multiplication

This section contains following levels:

- a. Single digit multiplication
- b. Double digit multiplication
- c. Multiple digit multiplication

Level 1: Give numbers and read them aloud. Ask the person with aphasia to multiply those numbers and mark the correct answer out of choices given.

Level 2: Give the written numbers and ask the person with aphasia to multiply and write the number. No choices are given in this level.

Level 3: Ask the person with aphasia to write the answer and say it aloud.

Stimuli:

a. Single digit multiplication

- 1. $2\times 2=$ _____ (3, 6, 4)
- 2. $2\times 3=$ _____ (2, 3, 6)
- 3. $4\times 3=$ _____ (8, 9, 12)
- 4. $4\times 4=$ _____ (14, 12, 16)
- 5. $6\times 2=$ _____ (16, 10, 12)

6. $8 \times 3 = \underline{\quad}$ (21, 23, 24)
7. $6 \times 5 = \underline{\quad}$ (15, 24, 30)
8. $7 \times 6 = \underline{\quad}$ (42, 46, 24)
9. $8 \times 6 = \underline{\quad}$ (48, 58, 68)
10. $9 \times 9 = \underline{\quad}$ (91, 81, 99)

b. Double digit multiplication

Set 1:

1. $11 \times 2 = \underline{\quad}$ (11, 33, 22)
2. $14 \times 2 = \underline{\quad}$ (24, 32, 28)
3. $12 \times 3 = \underline{\quad}$ (24, 39, 36)
4. $20 \times 3 = \underline{\quad}$ (50, 60, 23)
5. $13 \times 5 = \underline{\quad}$ (66, 45, 65)
6. $16 \times 6 = \underline{\quad}$ (96, 80, 76)
7. $17 \times 5 = \underline{\quad}$ (78, 85, 76)
8. $19 \times 4 = \underline{\quad}$ (76, 94, 67)
9. $30 \times 3 = \underline{\quad}$ (90, 60, 330)
10. $41 \times 2 = \underline{\quad}$ (81, 82, 80)

Set 2:

1. $22 \times 5 = \underline{\quad}$ (101, 110, 111)
2. $25 \times 6 = \underline{\quad}$ (152, 150, 156)
3. $33 \times 4 = \underline{\quad}$ (132, 133, 134)
4. $28 \times 7 = \underline{\quad}$ (196, 286, 216)
5. $27 \times 8 = \underline{\quad}$ (216, 200, 206)
6. $29 \times 10 = \underline{\quad}$ (290, 299, 210)
7. $37 \times 6 = \underline{\quad}$ (222, 212, 223)
8. $38 \times 8 = \underline{\quad}$ (304, 300, 388)
9. $42 \times 3 = \underline{\quad}$ (126, 128, 123)
10. $46 \times 6 = \underline{\quad}$ (276, 265, 277)
11. $58 \times 4 = \underline{\quad}$ (222, 232, 233)
12. $66 \times 6 = \underline{\quad}$ (396, 339, 366)

13. $74 \times 3 =$ _____ (223, 222, 243)

14. $88 \times 7 =$ _____ (661, 616, 666)

15. $99 \times 9 =$ _____ (881, 896, 891)

Set 3:

1. $11 \times 12 =$ _____ (132, 122, 133)

2. $13 \times 12 =$ _____ (156, 166, 155)

3. $13 \times 15 =$ _____ (199, 195, 185)

4. $14 \times 16 =$ _____ (223, 214, 224)

5. $20 \times 14 =$ _____ (280, 288, 214)

6. $21 \times 19 =$ _____ (333, 399, 393)

7. $23 \times 13 =$ _____ (299, 219, 290)

8. $24 \times 43 =$ _____ (1032, 1033, 1022)

9. $25 \times 25 =$ _____ (655, 526, 625)

10. $30 \times 30 =$ _____ (333, 306, 900)

c. Multiple digit multiplication

1. $250 \times 2 =$ _____ (500, 255, 505)

2. $700 \times 3 =$ _____ (2200, 2001, 2100)

3. $123 \times 9 =$ _____ (1107, 1017, 1117)

4. $200 \times 12 =$ _____ (2400, 2404, 1202)

5. $230 \times 13 =$ _____ (2990, 2909, 2999)

6. $315 \times 25 =$ _____ (7767, 7875, 2314)

7. $4600 \times 2 =$ _____ (9200, 2808, 2900)

8. $2303 \times 3 =$ _____ (6909, 6999, 6099)

9. $360 \times 30 =$ _____ (10800, 19800, 12309)

10. $112 \times 146 =$ _____ (16622, 16352, 10239)

D. Division

This section contains following levels:

a. Single digit division

b. Double digit division

Level 1: Give numbers and read them aloud. Ask the person with aphasia divide those numbers and mark the correct answer out of choices given.

Level 2: Give the written numbers and ask the person with aphasia to divide and write the number. No choices are given in this level.

Level 3: Ask the person with aphasia to write the answer and say it aloud.

Stimuli:

a. **Single digit division**

Set 1:

1. $4/2=$ _____ (4, 1, 2)
2. $9/3=$ _____ (3, 6, 9)
3. $12/4=$ _____ (3, 10, 8)
4. $15/5=$ _____ (5, 3, 10)
5. $18/6=$ _____ (10, 8, 3)
6. $24/6=$ _____ (4, 6, 20)
7. $30/6=$ _____ (5, 6, 3)
8. $35/7=$ _____ (7, 5, 12)
9. $42/7=$ _____ (6, 7, 4)
10. $48/8=$ _____ (8, 14, 6)
11. $56/8=$ _____ (8, 7, 9)
12. $64/8=$ _____ (8, 6, 12)
13. $72/9=$ _____ (9, 8, 7)
14. $90/9=$ _____ (9, 10, 11)
15. $100/10=$ _____ (10, 9, 100)
16. $500/5=$ _____ (100, 50, 12)
17. $1000/5=$ _____ (100, 200, 105)
18. $2200/2=$ _____ (1100, 1011, 1000)

b. **Double digit division**

Set 1:

1. $144/12=$ _____ (14, 112, 12)
2. $168/12=$ _____ (16, 14, 18)
3. $182/13=$ _____ (18, 12, 14)
4. $210/14=$ _____ (15, 12, 21)
5. $238/14=$ _____ (23, 17, 14)
6. $266/14=$ _____ (26, 14, 19)
7. $315/15=$ _____ (22, 21, 32)
8. $368/16=$ _____ (23, 36, 16)
9. $408/17=$ _____ (24, 20, 40)
10. $513/19=$ _____ (27, 19, 51)
11. $580/20=$ _____ (29, 28, 50)
12. $726/22=$ _____ (33, 26, 62)
13. $816/24=$ _____ (34, 33, 28)
14. $875/25=$ _____ (33, 37, 35)
15. $999/27=$ _____ (29, 37, 39)

Set 2:

1. $1200/40=$ _____ (40, 30, 33)
2. $1312/41=$ _____ (34, 32, 31)
3. $1428/42=$ _____ (34, 33, 28)
4. $1512/42=$ _____ (36, 33, 30)
5. $1628/44=$ _____ (38, 28, 37)
6. $1755/45=$ _____ (39, 40, 38)
7. $1974/47=$ _____ (42, 44, 40)
8. $2200/50=$ _____ (43, 40, 44)
9. $2538/54=$ _____ (47, 44, 48)
10. $2800/56=$ _____ (50, 51, 49)

LEVEL III

This level contains activities for generalizing the concepts learnt in reading, writing and arithmetic to practical daily life situations.

Few of the practical situations are suggested here. However, these practical situations can be tailor made to each individual with aphasia considering his environment, present abilities and communication needs.

Clinician is expected to simulate the situations and carry out role play activities for generalization of the skills learnt by the persons with aphasia. Use appropriate strategies and fade off the cues as much as possible to make the person with aphasia more independent to function in these situations.

e.g., situation: travelling in bus. C: P:

C: J°èUÉ °ÉÆÃUÀ·ÉÃPÀÄ?
ellige hOgabEku?

P: °ÉÄÊ,ÀÆjUÉ nPÉmï PÉÆr.
maisUrige TikeT koDi.

C: 75 gÀÄ¥Á¬Ä PÉÆr.
75 rupAyi koDi.

P: (gives 100 rupee note)

C: (Asks the person with aphasia, how much money he has to get back)

P: 25 gÀÄŸÁ¬Ä PÉÆr.
25 rupAyi koDi.

Other situations in which such role play activities can be carried out are:

- 1) Hospital setting
- 2) Vegetable maket
- 3) Bank transaction
- 4) Post office
- 5) Park
- 6) Hotel
- 7) Family gatherings
- 8) Social gatherings
- 9) Professional situation
- 10) Paying telephone/electrivity/hospital bills

Table 2. Overall treatment record sheet (Adapted from MAFAT-K).

Domain	% Correct responses	Overall progress
Reading		
Writing		
Arithmetic		

CHAPTER IV

SUMMARY AND CONCLUSION

The present manual is designed based on the reading, writing and arithmetic deficits in persons with aphasia. The main domains addressed in the manual are:

- Reading
- Writing
- Arithmetic

Each domain consists of three levels. In all the domains, level I is a functional level and level II and III are the advanced levels. Each level consists of various sections and sub-sections. Activities are listed under each sub-section along with word and picture stimuli. The training materials used are arranged in hierarchical order of increasing complexity. Stimulus hierarchy, response hierarchy, scoring pattern and progress criteria are provided for each sub-section. Especially, Guidelines are provided in order to carry out these reading and writing activities. A progress criterion list is also given for the progression from one domain to the other in the beginning of the manual. The treatment recording sheet for scoring activities of all domains is given in the table 1 (page no: 24). Finally, an overall treatment recording sheet (table 2, page no: 113) is provided.

Implications of the study

The manual is self explanatory and quite flexible. This can be used by speech language pathologists, student clinician and caregivers of persons with aphasia. Further, to suit the individual needs of persons with aphasia, the training material in this manual can be easily modified by the clinicians.

Limitations of the manual

The manual has been designed based on the clinical experience of reading, writing and arithmetic deficits observed in persons with aphasia. It is presumed that the activities will be quite effective and handy for the professionals working in the area of aphasia management. However, this manual has a scope for improvement with reference to field testing, which in turn will make this manual more effective.

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