Supplementary material for Kong AP-H. et al. The Main Concept Analysis: Validation and sensitivity in differentiating discourse produced by unimpaired English speakers from individuals with aphasia and dementia of Alzheimer type. Logopedics Phoniatrics Vocology, 2015;doi:10.3109/14015439.2015.1041551.

Appendix A

Scoring Procedures and Criteria for Main Concepts Indices in Kong (2009)

1. Four sets of sequential pictures are used for language sample elicitation. Based on the orthographic transcriptions of the sample, clinicians should to decide (a) if a main concept is *present* in a speaker's description, and (2) if the information in each main concept mentioned is *accurate* and *complete*.
2. For each concept, one of the following four scores is given:
 - a. Number of Accurate and Complete concepts (AC): For a concept to be considered as accurate and complete, the speaker must provide all essential information in the main concept, together with the main verb. For example, for the concept "The lady is cutting carrots", the main verb "cut" and two pieces of essential information "lady" and "carrot" must be present. The lexical items used to refer to the essential information must also be correct. However, alternate wording is allowed as long as the general meaning is the same. For example, acceptable alternatives for "lady" may include "granny", "woman", "mother", etc. A complete list of all main concepts and the acceptable alternative lexical items are given in Appendix B. Note that items in parentheses should not be treated as synonyms of the corresponding target words and use of different lexical items may sometimes affect the need to include or exclude one or more pieces of essential information within a main concept. For example, if 'The old man says thank you' is used by a speaker for the target concept of "The old man praises the boy", essential information of 'the boy' will not be treated as required information because 'says thank you to the boy' would be superfluous. If a speaker self-corrects or restates the essential information in a main concept, only the final version spoken will be scored. For example,

if a speaker said “The man ... no ... the woman is cutting some carrots”, consider it accurate. In contrast, if the description is “The woman ... no ... the man is cutting some carrots”, consider it inaccurate. Correctly used personal pronouns are allowed as long as the antecedent/original referent for the pronoun is provided previously in the production. If a speaker only uses personal pronouns to refer to the referent(s) in the pictures, consider the first main concept incomplete. For the remaining main concepts with correct/acceptable pronouns, consider them accurate. If the pronoun for a referent is inaccurate, consider the main concept inaccurate.

- b. Number of Accurate but Incomplete concepts (AI): When a speaker misses one or more pieces of essential information in the main concept. The given essential information must all be accurate. In addition, if nonspecific words are spoken in place of essential information, consider the main concept incomplete. For example, if a speaker said “The granny is cutting something” for the concept “The lady is cutting carrots”, consider it incomplete.
- c. Number of Inaccurate concepts (IN): When one or more pieces of essential information in the main concept given are inaccurate. Examples include paraphasias of verbs or nouns, neologisms, and jargons or irrelevant lexical items that do not match with the content of the picture stimuli. The scoring will not be affected if a speaker provides incomplete essential information, because this measure focuses only on the accuracy of the description.
- d. Number of Absent concepts (AB): None of the essential information in a main concept is given. That is, a speaker does not mention a particular main concept in the oral description.

3. A main concept score (MC) is computed to summarize the first four indices by the formula $(3 \times AC + 2 \times AI + 1 \times IN)$.
4. The efficiency measure of number of AC per minute is computed. The length of a sample is measured and converted to minutes (e.g., 69 seconds = 1.15 minutes). Timing begins after the instruction has been given and ends with the termination of the last word of the speaker. The measure is then calculated by dividing the AC by the duration of the recording in minutes.
5. Note that the essential information in each main concept does not have to be spoken in standard grammatical form or standard word order, as long as deviations would not lead to miscomprehension of the essential meaning of the main concept. The production also does not have to be correctly articulated to be considered accurate, as long as it is intelligible to a listener as the target words in the context of what the speaker is saying. The order of the main concept provided by a speaker for each picture set does not need to follow the sequences listed in Appendix B. However, if a main concept is accurate and is repeated and restated, score the best version.

Appendix B

List of Main Concepts and Acceptable Alternative Lexical Items**Set 1 – Cooking in a kitchen**

1. The old lady is **cutting** up carrots
2. The old lady **cuts** her finger
3. The old lady's finger is **bleeding**
4. The old lady is **looking for** something in a first-aid box
5. The old lady is **sticking** a band-aid on her finger

Old lady	(older woman, grandma, little old lady, elderly woman, elderly lady, old woman, granny, grandmother, older lady, lady, woman, grandmotherly lady)
Cutting	(slicing, chopping, dicing)
Carrots	(turnips)
Finger	(hand)
Bleeding	(dripping blood)
Looking for	(searching, reaching in)
First-aid box	(medicine cabinet, first-aid kit)
Using	(putting, applying, bandaging, affixing, wrapping, placing)
Band-aid	(bandage)

Set 2 – Waking up late for work

1. The man **wakes up**
2. The man is **shocked/late**
3. The man is **brushing** his teeth
4. The man is **combing** his hair
5. The man is **putting on** his pants
6. The man is **wearing** a pair of/two socks that are different/wrong in color

Man	(guy, gentleman, grandpa, young man, male, middle-aged man, kid, boy)
Wakes up	(jumps out, got out, overslept, gets up, gets woken up)

Shocked	(freaks out, distraught, fear, frightened, startled, alarmed, dismayed, surprised, frantic, horrified)
Putting on	(getting dressed, jumps into, slipping on, stepping into, throws on, whipping on)
Pants	(trousers, slacks)
Finds	(sees, realizes)
Two socks are different color	(a black and a white sock, not matching socks, two different pairs of socks, unmatching socks, two mismatched colors)

Set 3 – Buying ice cream

1. The mother and the girl **approach** an ice-cream parlour
2. The girl **asks for/wants** an ice-cream
3. The mother is **paying**
4. The man is **scooping** an ice-cream
5. The girl **dropped** the ice-cream on the ground
6. The girl is **crying/unhappy**
7. The man **looks at** the girl from behind
8. The man **gives** the girl another ice-cream cone
9. The girl is **smiling**

Mother	(woman, mom, mother, lady, mamma)
Girl	(daughter, little girl, young girl, small child)
Approach	(enter, go to, walk into)
Ice cream store	(ice cream shop, ice cream stand, ice cream parlor)
Asks	(picks out, orders, chooses)
Paying	(handing over money, giving money, purchasing)
Man	(gentleman, attendant, ice cream vendor, clerk, guy)
Scooping	(putting, preparing, fixing, dipping, making, dispensing, dishing out)
Crying	(looks sad, feels sad, is unhappy, has tears)

Falls	(drops, spilled, dumped, lost)
(on the) floor	(on the ground)
Looks at	(sees, notices)
Gives	(hands, offers, gets, served, replaces, makes)
Smiling	(happy, pleased, cheers up)

Set 4 – Helping an old man

1. The father and the son are **walking** on the street
2. The old man is **carrying** a grocery bag
3. The oranges **fall** on the ground
4. The boy **sees** the incident
5. The boy is **helping** the old man
6. The old man is **praising** the boy

Father	(man, gentleman, dad)
Son	(young son, boy, little boy, small child)
Old man	(older man, sad man, gentleman, lonely guy, elderly man, grandpa, granddad, grandfather, ugly man)
Walking	(passing)
Carrying	(got, has, holding)
Fall (on the floor)	(spill, drop, tumble)
Sees	(notices, looks around, turns around, observes)
Help	(collects, assists, goes to help, turns around to help, runs to help, starts to help)
Praising	(gives thumbs up, says good job, says thank you, appreciates, tells something positive)

Note: The main verb for each main concept is **bolded**. All the essential information within a main concept is underlined.