Introduction to the Structured Observational Test of Function (SOTOF; 2nd edition) and the Activity Card Sort – United Kingdom version (ACS-UK): two occupational therapy assessments for older people.

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Background: Activity Card Sort (ACS)

- The Activity Card Sort (ACS; Baum & Edwards, 2008) is recognised internationally as a useful self-report measure of participation for clinical practice and research (e.g., Eriksson, et al., 2011)
- ACS-UK (Laver-Fawcett & Mallinson, 2013) has 93 Photograph cards for activities grouped in 4 categories:
  - Instrumental, Low Demand Leisure, High Demand Leisure, Social/Cultural
- 3 ACS-UK versions: Recovery, Institutional and Community Living (using the same 93 photo activity cards)
- Different sorting categories of participation levels used for each of the three versions

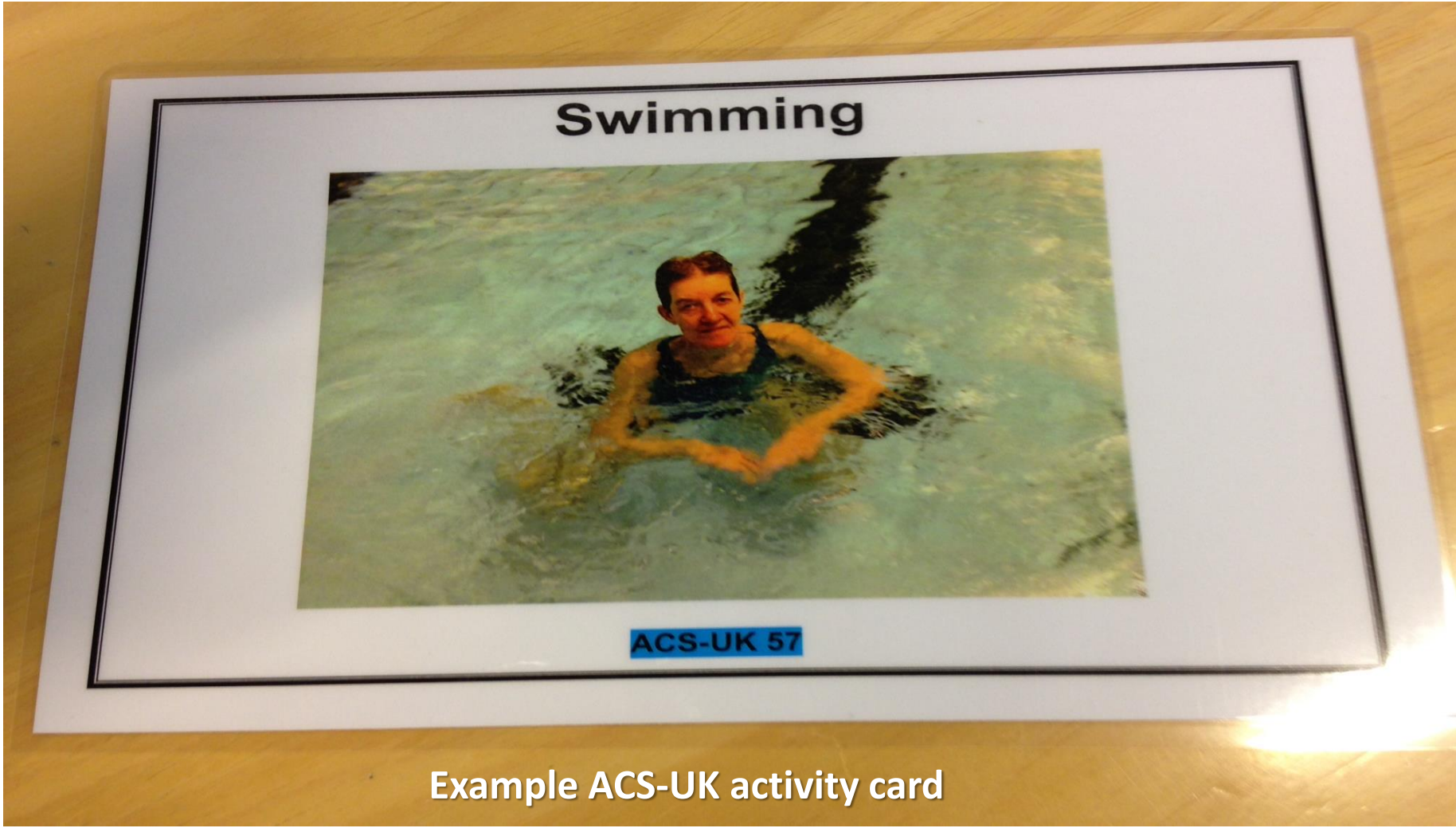
Uses of the ACS

- The Activity Card Sort (ACS) measures an individual's occupational performance *(descriptive assessment)*
- Used to monitor changes in activity participation over time due to a chronic health condition, a stroke or aging *(evaluative assessment)*
- Comparing premorbid engagement in activities with current activity participation (Baum, Perlmutter & Edwards, 2000; Hartman-Maeir, Soroker, Ring, Avni & Katz, 2007)

Uses of the ACS

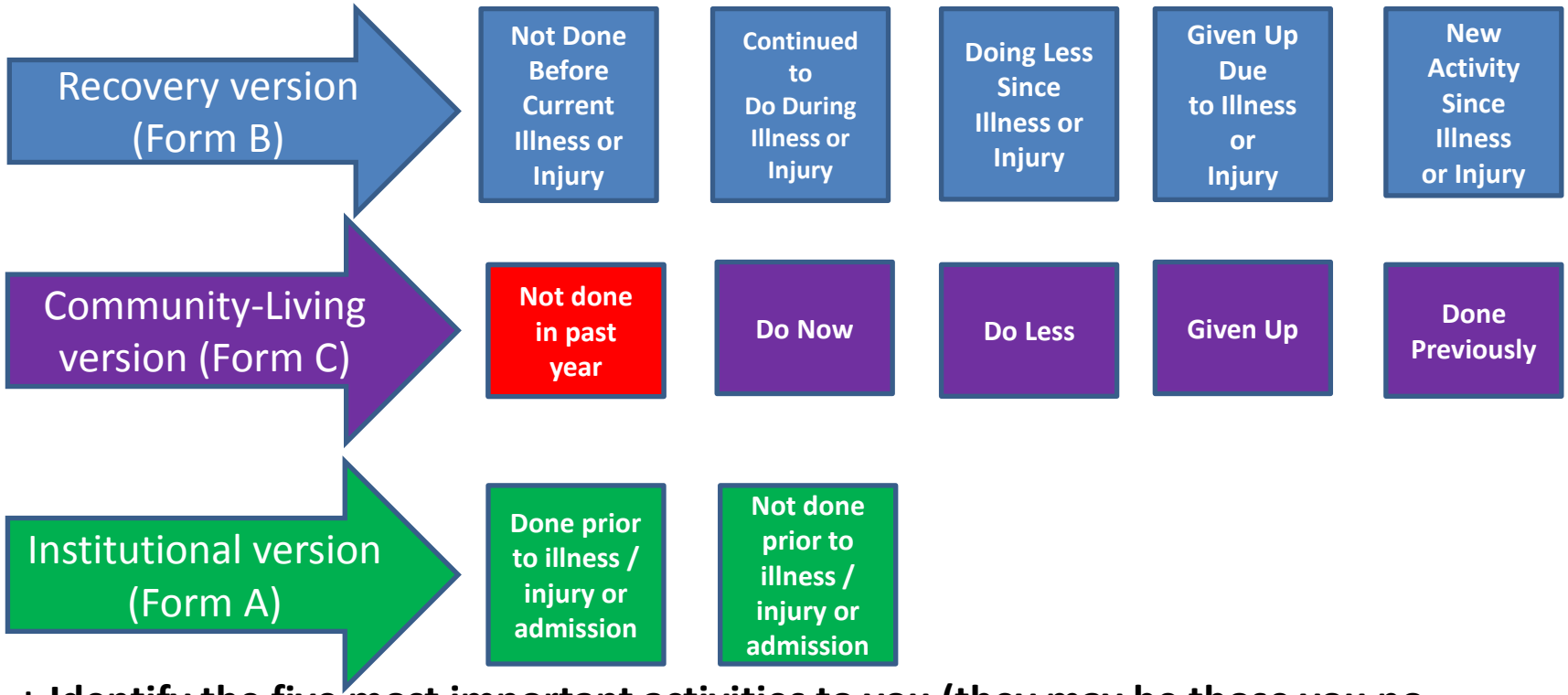
- Useful for initial assessment, goal setting and intervention planning *(descriptive assessment)*
- To monitor changes in activity participation following onset of illness (Albert, Bear-Lehman & Burkhardt, 2009; Chan, Chung & Packer, 2006; Packer, Boshoff & DeJonge, 2008) *(evaluative assessment)*
- To evaluate the effects of an intervention designed to impact on a person's activity participation *(evaluative assessment)*
- Creating an occupational history *(descriptive assessment)*

(Canadian Stroke Network – Stroke Engine Assess, n.d.)



Example ACS-UK activity card

Sorting categories for ACS versions



+ Identify the five most important activities to you (they may be those you no longer do)

A4 Sorting category cards are placed on the table in from of the client.
ACS-UK has 93 activity cards
Each has a photograph and activity label
The person is given 4 piles of activities to sort:

1. Instrumental Activities of Daily Living (IADL)
2. Low Demand Leisure (LDL)
3. High Demand Leisure (HDL)
4. Social Cultural (SC)

Scoring for ACS-UK

Community-Living version (Form C)

Done Previously
Calculated after sort:
Do More + Do Now + Do Less + Given Up

+ At the end participants are asked to "identify the five most important activities to you (they may be those you no longer do)"

ACS-UK card	ACS-UK Activity	Never Done	Not done in past year	Do More	Do Now	Do Less	Given Up	Done Previously	Scores	Comments
	High Demand Leisure		Not sorted							
53	Going to the Beach					0.5		1		
54	Recreational Shopping					0.5		1		
55	Dancing						0	1		Used to go to tea dances with her husband
56	Swimming						0	1		
57	Indoor Bowling	X								
58	Outdoor Bowling	X								
59	Playing Golf	X								
60	Walking					0.5		1		
61	Hiking / Rambling	X								
62	Exercising					0.5		1		
63	Riding a Bicycle						0	1		
64	Going on Holiday / Travelling					0.5		1		
65	Attending a Hobby / Leisure Group			X	1			1		Joined a local tai chi club
66	Going to Gardens / Parks					0.5		1		Would like to go more
67	Fishing	X								But use to go with father as a child and watch him fishing
	Total High Demand Leisure Activities	5		1	1	3	3x 0= 0	10	Current	1 + 3 = 4 (CA)
									Previous	10 (PA)
									% Retained	4/10 = 0.4 x100 = 40% (RAS)

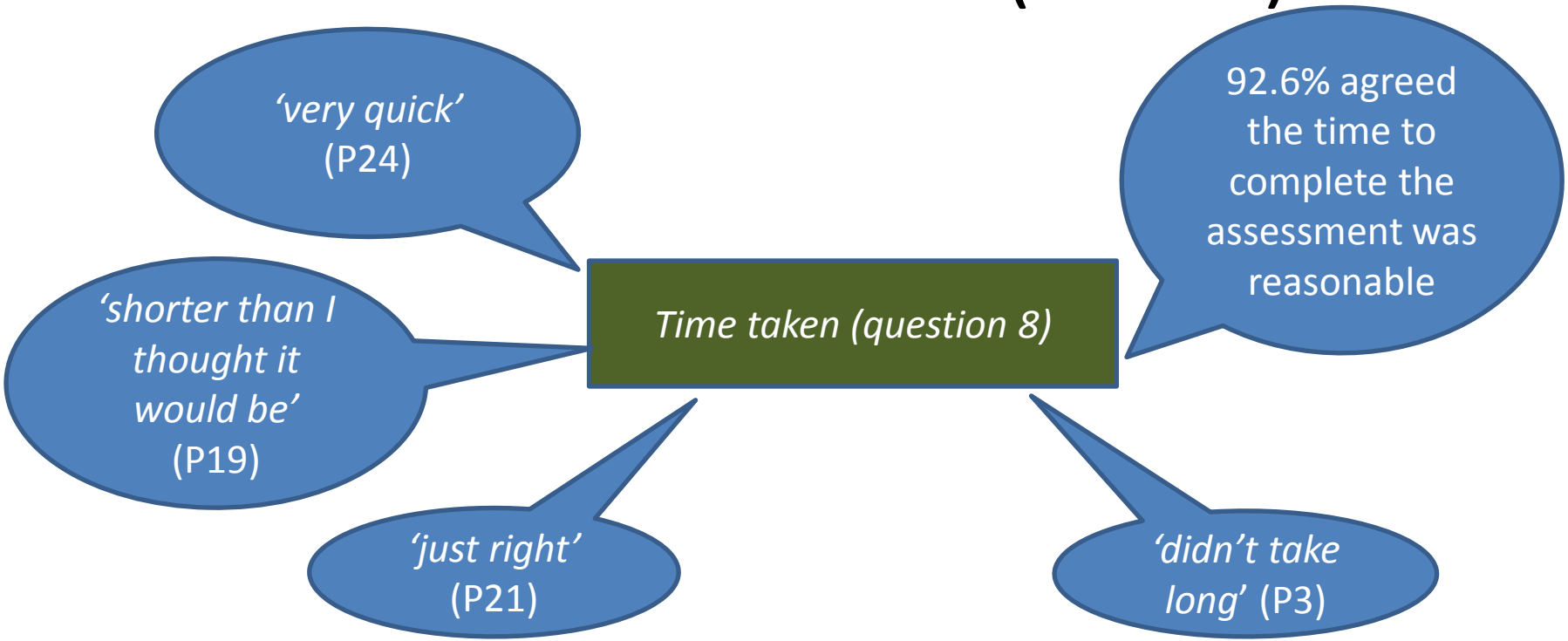
Reliability study summary

- The inter-rater and test-retest reliability findings suggest that the ACS-UK has good to excellent reliability with single measure Interclass Correlation Coefficient figures ranging from 0.64 to 0.86 for the Global Retained Activity Scores (GRAS) of inter-rater reliability and 0.754 to 0.830 of test-retest reliability for Sample 1 and 2 respectively
- The mean retained activity percentage of the GRAS of Sample 2 was 62.75% which is slightly higher than the mean of GRAS for Sample 1 (62.45%)
- The mean for the top five activities for Sample 1 ranged from 39.36% to 56.67%. For Sample 2 the mean ranged from 38.17% to 40.63%

Reliability study summary

- The results of this study demonstrate that the ACS-UK is a reliable, robust and client-centred assessment tool that can be used by occupational therapists, to detect participation restrictions in older British adults.
- The study highlighted that the top five activities should only be used as a starting point for practitioners to collaboratively decide on what activities can potentially be used to aid therapy.

Older people's perceptions of the time taken to do ACS-UK (n = 26)



Further written examples in brackets have been added for several ACS-UK items

This is an example of additional descriptions for: Taking Care of Pets (ACS-UK 13)

Time to administer ACS-UK

- Despite having the most items of any ACS versions, the average time for administering and scoring the ACS-UK was approx. 14 ½ minutes
- longest scoring time < 7 minutes
- longest administration time was 17 minutes
- total assessment time approx. 24 minutes

Face validity and clinical utility study

- The study showed that overall the ACS-UK has good acceptability and utility in terms of older adult's first impressions, ease of understanding instructions, activities, activity labels and carrying out the card sort.
- In terms of clinical utility, the reasonable time required to administer and score the ACS-UK, along with the ease of administering and scoring the assessment suggests that the ACS-UK has good clinical utility.

Limitations of the ACS

The ACS does not provide information regarding factors such as:

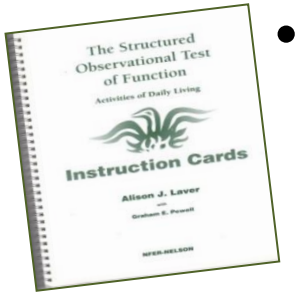
- Length of time spent engaged in activities
- Frequency of participation
- Social interactions during activity participation
- Difficulty experienced while performing an activity

- (Baum et al., 2000; Katz, Karpin, Lak, Furman & Hartman-Meier, 2003)

(Canadian Stroke Network – Stroke Engine Assess, n.d.)

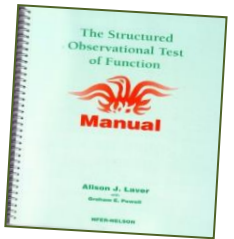
Structured Observational test of Function (SOTOF)

- A structured assessment tool used in OT practice that uses elements of a dynamic (“interactive”) approach to assess ADL skills
- Developed to provide a detailed description of functional status and associated neuropsychological deficits within a structured evaluation of ADL
- Aims to evaluate performance of activities of daily living and provides detailed information on neurological function.



SOTOF - introduction

- Developed for use with older adults (age 60 years and above) with possible neurological disturbance.
- This includes people with stroke, head injury, Parkinson's disease and / or dementia
- It is a descriptive assessment, but can be used to evaluate changes in function over time.
- The 2nd edition enhances the dynamic assessment element of SOTOF.



Note: Figure adapted from Laver (1994) PhD thesis “The development of the Structured Observational test of Function (SOTOF) p. 191

Level of function / dysfunction	DISABILITY	FUNCTIONAL LIMITATION	IMPAIRMENT	PATHOPHYSIOLOGY
Definition of level	Inability or limitation in performing socially defined activities and roles within a social and physical environment resulting from internal or external factors and their interplay.	Restriction or lack of ability to perform an action or activity in the manner or range considered normal that results from impairment.	Loss and / or abnormality or mental, emotional, physiological, or anatomical structure or function; including secondary losses and pain.	Interruption or interference of normal physiological and developmental processes or structures.
SOTOF assessment question	*HOW ?*	*WHAT?*	*WHICH?*	*WHY?*
SOTOF assessment domain	Occupational performance	Specific skill or ability, task sub-components	Performance Components	Neurological deficit
SOTOF specific assessment areas	Personal activities of daily living (ADL) – four basic tasks: • Feeding • Washing • Drinking • Dressing	Examples of skill sub-component include: • Reaching • Scanning • Sequencing • Naming	Performance components assessed include: • Perceptual • Cognitive • Motor • Sensory	Example deficits assessed include: • Apraxia • Dysphasia • Agnosia • Spaciticity

SOTOF (2nd edition) Graduated Mediation protocol

As adapted from EFPT (Baum and Wolf, 2013) and DLOCTA-G (Katz et al., 2011)

0	Independent	The person is independent completing the task. No prompting or assistance is required from the clinician.
1	General prompt	This could be a statement (Katz et al., 2011) e.g. 'take your time' or could be a general question e.g. 'what do you think is the next step?' or 'what else might you need to complete this task?' (Baum and Wolf, 2013 p.3). This is not an action or telling the person what to do.
2	Gestural Cue	This could be miming the action that is required to complete the particular task or a movement that may guide the participant. This may include pointing to where they might find an item or pointing to equipment they may need to complete the task (Baum and Wolf, 2013).
3	Specific feedback/cue	This is a verbal cue. It may be feedback (Katz et al., 2011) such as 'there is a mistake, can you try and correct it' or a command such as 'pick up the cup' (Baum and Wolf, 2013 p.3).
4	Physical assistance / Co-active assistance/ Modifications	This clinician physically supports the person to complete an action, e.g. hold the shirt whilst the person puts his / her first arm in the sleeve (Baum and Wolf, 2013). The clinician reduces the amount of stimuli or modifies the environment to reduce the task demand (e.g. changing the physical environment; Katz et al., 2011). The clinician may also do the action in order for the person to copy (Katz et al., 2011). The person should still be attending to the task (Baum and Wolf, 2013). The clinician physically guides the movement but allowing the person to lead and withdraws the physical assistance if the person takes over the movement (Sanderson and Gitsham, 1991).
5	Do for the person	The person is unable to complete the task so the clinician completes the task, or the part of the task, for the person.

Instructions for applying the graduated mediation protocol

- The clinician must provide the prompts/cues in order of the graduated prompt protocol provided starting at level one before moving to the next higher level.
- The clinician should allow the person time before intervening with a cue (Baum and Wolf, 2013).

Instructions for applying the graduated mediation protocol

- They must also give two cues on each level of the graduated prompt protocol before moving to the higher level of the graduated prompt protocol (Baum and Wolf, 2013).
- The clinician must ensure the task is finished even if this requires the highest level of the graduated prompt protocol, ‘do for the person’ (Baum and Wolf, 2013).
- This is because it is an interactive procedure and will contribute to maintaining the motivation for both yourself and the client

(Laver-Fawcett and Marrison, 2016)

Instructions for applying the graduated mediation protocol

- The higher the score the more assistance is required by the person. In order to complete the final scoring in the neuropsychological checklist the clinician should look down all the scores within each task and whichever sub-test item scores the highest on the graduated prompt protocol is the one recorded for that task.
- This is because somewhere within the task the person needed that level of assistance in order to be successful.
- Examples of prompts / cues /modifications / assistance for levels 1 to 4 for each sub-test item can be found in the third column of the SOTOF (2nd edition) Instruction Cards.

Instructions for applying the graduated mediation protocol

- Unless they are not applicable for that type of sub-test item, for example, if the person has their eyes closed to offer a gestural cue is not appropriate.
- As level 4 has a variety of different prompting options for the clinician to use, when completing the record form the specific type of prompt / cue / assistance / modification provided at this level should be noted on the form.

SOTOF: example instructions

Standardised instructions for administration

To aid diagnostic reasoning you also have suggestions for possible areas of deficit linked to each test item

Graduated prompt protocol specific test item examples

Suggestions for further prompts, cues and assessment

	TASK 1: Eating Task and instruction	Possible area of deficit	Graduated prompt protocol examples	Further suggested assessment
1.	(EL) Instruct: 'Please close your eyes. I am putting an object in your hand, and I want you to tell me what it is without looking.' Put the spoon in the hand on the opposite side to the cerebral lesion. If client fails to identify, reassess with the other hand.	• Tactile agnosia • Sensory deficit	1. General prompt: 'Can you feel what I have placed in your hand?' 2. Gestural Cue: N/A 3. Specific feedback/cue: if they provide a wrong answer, ask: 'that is incorrect, have another go' or 'feel around the item more'. 4. Physical Assistance/modifications: support the person's hand to feel around the spoon.	Assess visual object recognition. Assess sensation (light touch, pressure, pain and temperature) and proprioception of both hands. Reassess with other larger objects; if the person manages the tasks gradually reduce the size of objects to be identified

Scoring SOTOF – 6 step process

1. For each SOTOF test item decide if the person was able or unable to complete the test item.
2. For any items where the person was unable to perform the test item, use dynamic assessment to support diagnostic reasoning and help refine understanding of the underlying problem by applying the **Graduated mediation protocol**
3. Record which level in the graduated prompt 0-5 protocol was required for that item
4. Summarise you hypotheses and observations for the ADL task in the summary section of the form and note the person's learning potential and which prompting method/level was most effective for the client.

(repeat steps 1 -4 for each of the 4 ADL tasks)

3. ✓ ✗ Tick boxes on the neuropsychological checklist to indicate strengths and put a cross to indicate deficits. If using the electronic version you could highlight items on the form in different colours to indicate intact function / strengths and deficits.
4. Rate level of independence in the 4 ADL tasks using the 0-5 point scale

SOTOF (2nd edition): Task 1 Eating revised scoring form

	Item	Able	Unable	Prompts/cues required	Hypotheses, further assessments required, comments
1	(EL) Identifies spoon through touch.	[ ] Right [ ] Left	[ ] Right [ ] Left	[ ] Independent [ ] General prompt [ ] Gestural cue [ ] Specific feedback/cue [ ] Physical assistance	

Instructions for scoring the graduated prompt protocol

- When using the record form tick the highest level of the graduated prompt protocol carried out in each subtest to complete the task.
- In the summary section of each task the clinician should comment on the learning potential of the person and how effective the prompts / cues / modifications / assistance were.
- The clinician should also comment on which graduated prompt methods were the most effective for that individual, as this could inform future assessments and/or interventions.

✓ Intact - strength ✗ Observed problems - deficit

SOTOF Neuropsychological checklist

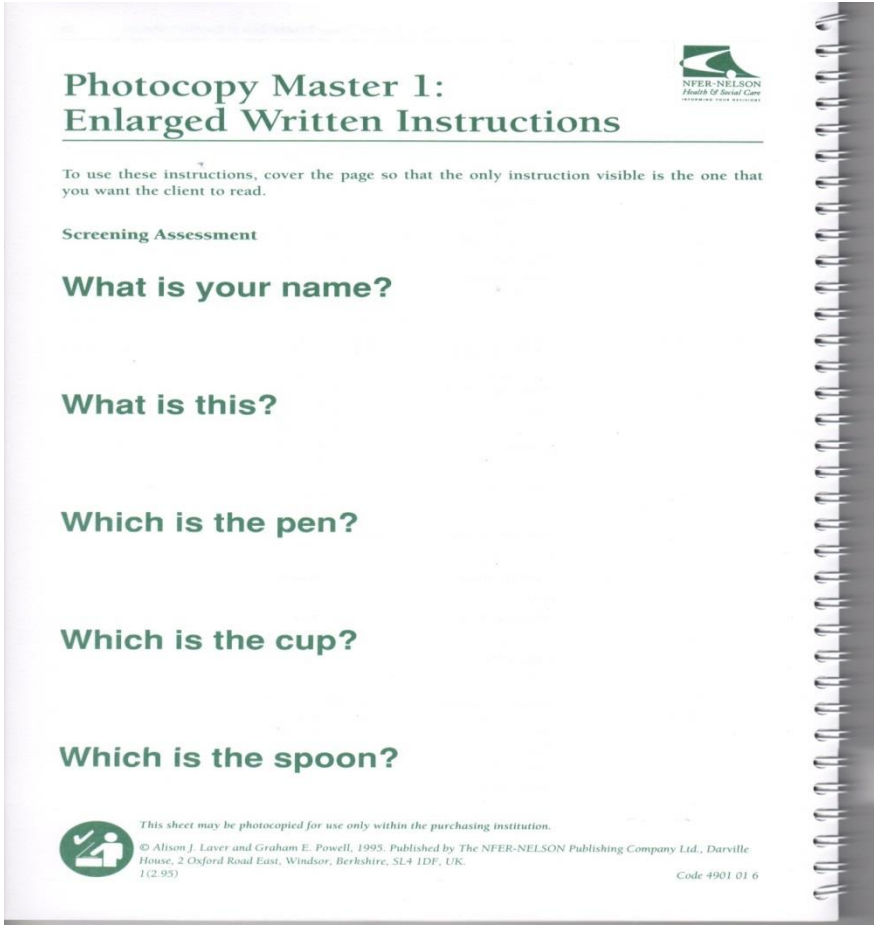
Deficit	Screening assessment	Eating Task 1	Washing Task 2	Pouring and Drinking Task 3	Dressing Task 4
LANGUAGE					
Comprehension	✓	✓	✓	✓	✓
Expression					
HEARING					
Hearing acuity	✓	✓	✓	✓	✓
Auditory agnosia	✓	✓	✗	✗	✓
COGNITION					
Orientation	✓	✗	✗	✗	✗
Attention	✓	✓	✓	✓	✓

SOTOF (2nd edition): revised level of independence rating

Occupational Performance	Independent	Needed General Prompt	Needed Gestural Cue	Needed Specific Feedback/ Cue	Needed Physical Assistance	Do for client
Eating: Client's ability to eat independently form a bowl.						
Washing: Client's ability to wash and dry hands.						
Pouring and Drinking: Client's ability to pour from a jug and to drink from a cup.						
Dressing: Client's ability to put on a front-fastening, long-sleeved garment.						

Written instructions are provided. These can be useful for:

- people with hearing deficit
- people with dementia can benefit from written, as well as verbal instructions.
- If the person is struggling with verbal instructions written cards can be used to assess whether the person can function better with written instructions.
- This assessment can be useful for identifying possible intervention with written instructions and word cue cards.



Photocopy Master 1: Enlarged Written Instructions

NFER-NELSON
Health & Social Care

To use these instructions, cover the page so that the only instruction visible is the one that you want the client to read.

Screening Assessment

What is your name?

What is this?

Which is the pen?

Which is the cup?

Which is the spoon?

1(2.95)

Code 4901 01 6

Current clinical utility study

- *Are you working with older adults with neurological impairments? For example, with people who have stroke, head injury, Parkinson's disease or dementia?*
- *Would you be interested to receive and pilot a copy of the updated Structured Observational Test of Function (SOTOF) in return for your feedback on the usefulness of the assessment?*
- The study will involve administering the SOTOF to at least one client and completing an on-line survey related your views of its clinical usefulness.

Questions and discussion

ACS References

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- Laver-Fawcett AJ, Mallinson S (2013) The Development of the Activity Card Sort – United Kingdom version (ACS-UK). *OTJR: Occupation, Participation, and Health,* 33 (3), 134-145**.** DOI: 10.3928/15394492-20130614-02

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SOTOF references

Original reference

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2nd edition

- Laver-Fawcett AJ, Marrison, E (2016) **Structured Observational test of Function (SOTOF). 2nd edition**. York: York St John University

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