

## Introduction to Cognitive Stimulation Therapy (CST)

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People Care More Here



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## Speaker Disclosures

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**Max Zubatsky**

- HRSA

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## Objectives of Training

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1. To consider key psychosocial approaches for dementia.
2. To learn about how CST was designed and evaluated.
3. To become familiar with the CST sessions and demonstrate competency in application.
4. To understand how to apply the key principles to CST and demonstrate competency in use.
5. To develop a plan for running CST groups, which considers issues around implementation.

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## The Biopsychosocial Model of Dementia\*

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DEMENTIA = NF + MS + SP + P + SS + E + PH + LE + M

NF = Neurological Factors  
MS = Mental Stimulation  
SP = Social Psychology  
P = Personality  
SS = Sensory Stimulation  
E = Environment  
PH = Health  
LE = Life Events  
M = Mood



\*Spector A and Orrell M (2010). Using a Biopsychosocial model of dementia as a tool to guide clinical practice. *International Psychogeriatrics*, 22 (6): 957-965.

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## Reality Orientation\*

- “The presentation and repetition of time, place and person related information”.
- Made important impact in 1960s: one of first non-drug interventions for dementia.
- 24 hour RO (used in every interaction) versus group RO. Tasks included maps, categorizing words /objects, food, current affairs.
- RO boards: contain information such as day, date, next meal, weather, news headline, name of home, daily activities.
- Some evidence-base for its effectiveness\*\* but rarely used in practice since.



\*Folsom JC (1966). Reality Orientation for the elderly mental patient. Read at 122<sup>nd</sup> annual meeting of American Psychiatric Association, May 1966.

\*\*Spector A, Orrell M, Davies S & Woods B (2000). A systematic Review of the use of Reality Orientation in dementia. *The Gerontologist*, 40 (2): 206-212

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## Reminiscence Therapy\*

- Discussion about the past, often using prompts (e.g. pictures, objects, music) with groups or individuals (e.g. life review books).
- Focuses on long-term memory, the last to deteriorate in dementia.
- Cochrane review\*\* of 16 studies including 4 multi-center RCTs showed improvements in cognition and mood following individual sessions and in communication following group sessions.
- Greatest effects on quality of life were found in care homes. Overall, effect sizes were very small and diversity of approaches made it hard to compare studies.



\*Butler RN & Lewis MI (1977). *Aging and Mental health: Positive psychosocial approaches*. Saint Louis: CV Mosby Company.

\*\*Woods, B., Spector, A. E., Jones, C. A., Orrell, M., & Davies, S. P. (2005). Reminiscence therapy for dementia. *The Cochrane Library*.

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## How did CST come about?

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- In the mid 1990's, there was increased interest in *positive, non-pharmacological approaches to dementia care*.
- Promising drug trials with rigorous methodology (e.g. tacrine).
- Woods & Orrell editorial (1996)\*: 'Tacrine & psychological therapies in dementia – no contest?'
  - Psychological therapies as serious competitors to drugs.
  - Low quality of methodology of studies evaluating psych approaches.
  - Standard, sensitive instruments of measurement evaluating a range of outcomes in order to compare to drug trials.
  - Funding bodies should encourage large scale, robust, multi site studies inc. cost/benefits analysis.
- Funding secured for the development of a psychological therapy package for dementia.

\*Orrell, M., & Woods, B. (1996). Editorial Comment. Tacrine and psychological therapies in dementia—no contest?. *International Journal of Geriatric Psychiatry*, 11(3), 189-192.

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## Development of CST

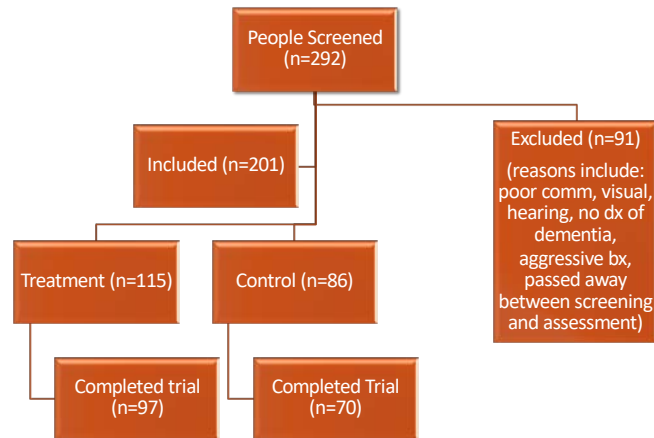
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- CST was developed through systematic reviews of literature and pilot study\*.
- Combined the most effective elements of different therapies to develop the CST program.
  - Reality Orientation
  - Reminiscence Therapy
  - Multi Sensory Stimulation
  - Validation Therapy
- 14 session program with themed activities (e.g. food, childhood).
- Designed to run twice a week for 7 weeks.

\*Spector A, Orrell M, Davies S, Woods B (2001) Can reality orientation be rehabilitated? Developing and piloting of an evidence-based programme of cognition-based therapies for people with dementia. *Neuropsychological Rehabilitation* 11. 3\4. 377-397.

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## Profile of the Initial CST controlled trial and attrition (Spector, 2003)



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Efficacy Measures <sup>1</sup>	Change from Baseline	Change from Baseline	Group Difference	Group Difference	ANOVA (between group diff)
	Tx mean (sd)	Control mean (sd)	Mean (s.e.)	95 % CI	Between groups
MMSE	+0.9 (3.5)	-0.4 (3.5)	+1.14 (0.09)	0.57-2.27	F=4.14, P=0.044
ADAS-Cog	+1.9 (6.2) <sup>3</sup>	-0.3 (5.5) <sup>4</sup>	+2.37 (0.87)	0.64-4.09	F=6.18, P=0.014
QoL-AD	+1.3 (5.1)	-0.8 (5.6)	+1.64 (0.78)	0.09-3.18	F=4.95, P=0.028
Holden	+0.2 (6.1)	-3.2 (6.3)	+2.3 (0.93)	-0.45-4.15	F=2.92, P=0.090
Cornell	0 (6.2)	-0.5 (7.0)	+0.12 (0.72)	-1.56-1.31	P=0.648

Change from baseline in measures of efficacy at follow-up: intention-to-treat analysis (Spector, 2003)

1. Primary outcome measure: MMSE; secondary outcome measures: ADAS ^Cog and QoL^AD. 1. Primary outcome measure: MMSE; secondary outcome measures: ADAS ^Cog and QoL^AD.  
 2. C, difference between centres; G, difference between genders. 2. C, difference between centres; G, difference between genders. 3. Zero or more points improvement:  
 3. Zero or more points improvement: n=58 (50%); 4 or more points improvement: n=34 (30%).34 (30%). 4. Zero or more points improvement: 4. Zero or more points improvement: n=32 (37%);  
 4 or more points improvement: n=11 (13%)

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## International CST Research

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- Recent systematic review \* of studies evaluating this specific CST protocol, many culturally adapted.
- Included 12 papers of which 8 were RCTs and 4 were pre-post studies.
- Included research from the UK, US, Hong Kong, Japan, Tanzania and Portugal.
- All 12 studies examined cognition, with 9 finding a significant positive impact.
- 4 studies examined impact on specific cognitive domains, confirming that the greatest impact was on language.
- 9 studies examined QoL, of which 4 found significant positive impacts.
- 8 studies examined depression, of which 4 found significant positive impacts.
- 3 studies examined impact on caregivers, with 2 finding some benefits.
- Demonstrates how CST can successfully be generalized across language and culture.

\*Lobbia, A., Carbone, E., Faggian, S., Gardini, S., Piras, F., Spector, A., & Borella, E. (2018). The Efficacy of Cognitive Stimulation Therapy (CST) for People With Mild-to-Moderate Dementia. *European Psychologist*.

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## Long-term benefits: Maintenance CST

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- Follow-up trial (n=237) evaluated a weekly, 24-session program of Maintenance CST (MCST) compared to treatment as usual. For people with mild to moderate dementia who had previously received 14 sessions of CST. A third of the sample was on dementia medication.
- MCST improved quality of life at 3 and 6 months, and activities of daily living at 3 months.
- Cognition was higher in MCST group but the difference was not significant.
- Sub-analysis indicated that MCST appeared to be effective irrespective of whether dementia medication was prescribed.
- Greatest improvements were seen in the medication plus MCST group.
- Conclusions: There is good evidence for the benefits of continuing CST beyond the initial program. Whilst people are still willing and able, CST should be continued.

\*Orrell M, Aguirre E, Spector A, Hoare Z, Woods RT, Streater A, Donovan H, Hoe J, Russell I, (2014) Maintenance cognitive stimulation therapy (CST) for dementia: single-blind, multicentre, pragmatic randomized controlled trial. *British Journal of Psychiatry* 204 (204): 1-8

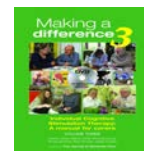
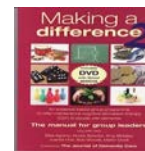
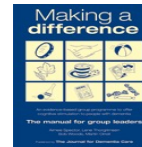
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## Impact of CST

- UK best practice / routine care guidelines
- International guidelines e.g. Alzheimer's Disease International
- CST used in over 25 countries
- Worldwide culturally adapted versions of CST
- 4 manuals published: CST, maintenance CST and individual CST

  
National Institute for  
Health and Clinical Excellence

  
Alzheimer's Disease  
International



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## Who benefits most?



The higher the **cognitive & brain reserve**, the better the response to CST.



People >80 years old

Females



People on anti-dementia drugs

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## Implementation of CST

- ❖ Key Features
- ❖ Evaluating for Appropriateness of Participants
- ❖ Session Structure
- ❖ Key Principles
- ❖ Combining exercise with CST



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### Key Features of the Program

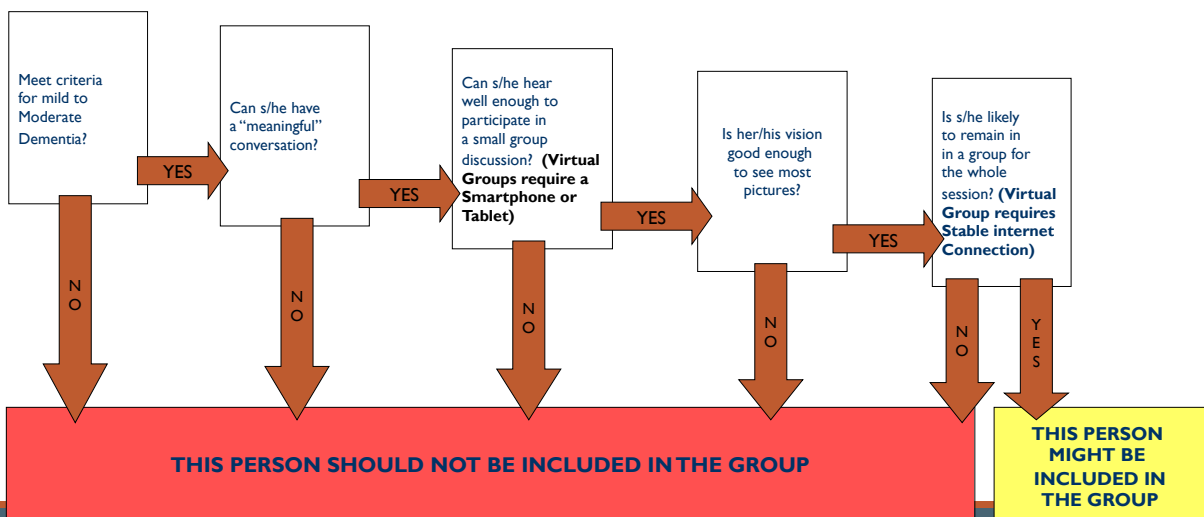
- 14 sessions, usually twice a week.
- Approximately one hour in length.
- Ideally 5-8 people in groups, run by two facilitators.
- Each session has choice of activities, to cater for interests and abilities of group.
- Group members should ideally be at similar stages of dementia, so activities can be pitched accordingly.
- Attention should be paid to gender mix.



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## Who should be included?



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## Session Structure

- Introduction
- Theme Song
- Current Affairs
- Main Activity
- Suggested activities for home
- Closure



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## Session Structure: Introduction

### Welcome every member individually

- Orients members to beginning of group and one another
- Fosters Rapport

### State the Group name

- Chosen by Group members on first session
- Encourages feeling of ownership of group

### Soft ball toss

- Serves as a warm up and orientation
- Increases level of alert and intensity
- Tool for facilitators to gauge language

### Reference to day, weather, season (always on board as cue)

- Implicit orientation

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## Session Structure: Theme Song

- Sung at beginning and end of each session
- Chosen by group members
  - Offer group participants options to pick from
  - Pay attention to songs relevant to demographic
- Short song or chorus only are appropriate

**YOU ARE MY SUNSHINE**  
Musik und Originaltext: Jerome Kern - Charles Mitchell  
Arrangement: Peter van Elteren - Erika Schreyer

Stufe: Elementar  
Tempo: ♩ = 100  
Zählart: 2/4

Chorus: I am - my - sun - shine, sun - shine, sun - shine, I am - my - sun - shine.

Verse: When the sun - ny - day breaks, then I will smile, when the sun - ny - day breaks, then I will smile.

Bridge: When the sun - ny - day breaks, then I will smile, when the sun - ny - day breaks, then I will smile.

Chorus: I am - my - sun - shine, sun - shine, sun - shine, I am - my - sun - shine.

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## Session Structure: Current Affairs

- Pull from local and national sources
- Human interest stories are crowd pleasers
- Do not shy away from controversial topics
- Print out individual copy for each member
  - Day and Date for orientation
  - Pay close attention to font size



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## Session Structure: Main Activity

- Each CST session centers around a suggested activity found within the manual
  - Open to manipulation
- Level A and Level B (A more complex/B simple)
- Freedom to enrich the experience
  - Integrate music, sensory stimulation (baking cookies in an oven)

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## Session Structure: Suggested Activities for Home/Closure

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- Suggested activities for home
  - May include in take home handout or copy of news article read at beginning of session
- Closure
  - Discuss time, day, and activity for next session
  - Ask members for their opinions regarding the group session

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## How do we think CST works?

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**Use it or lose it** – taking part in mentally stimulating activities strengthens & creates new neuronal connections.



Provides **complexity, novelty & diversity** required for transferrable cognitive gains (Moreau & Conway, 2014)



**Positive reinforcement** of questioning, thinking about and interacting with objects



**Social environment** is positive & stimulating

**QoL** is mediated by improvements in cognition

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**CST at Perry County Memorial Hospital**

















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**Key Principles**

1	Mental stimulation
2	New ideas, thought and associations
3	Using orientation, but sensitively and implicitly
4	Opinions, rather than facts
5	Using reminiscence, and as an aid to the here-and-now
6	Providing triggers to aid recall
7	Continuity and consistency between sessions
8	Implicit (rather than explicit) learning
9	Stimulating language
10	Stimulating executive functioning
11	Person-centred
12	Respect
13	Involvement
14	Inclusion
15	Choice
16	Fun
17	Maximizing potential
18	Building / strengthening relationships

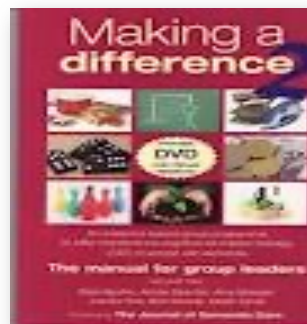
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## CST session themes

      	<table border="1"> <tbody> <tr> <td>Physical games</td> <td>Being creative</td> </tr> <tr> <td>Sound</td> <td>Categorizing objects</td> </tr> <tr> <td>Childhood</td> <td>Orientation</td> </tr> <tr> <td>Food</td> <td>Using money</td> </tr> <tr> <td>Current Affairs</td> <td>Number games</td> </tr> <tr> <td>Faces / Scenes</td> <td>Word games</td> </tr> <tr> <td>Word Association</td> <td>Team quiz</td> </tr> </tbody> </table>	Physical games	Being creative	Sound	Categorizing objects	Childhood	Orientation	Food	Using money	Current Affairs	Number games	Faces / Scenes	Word games	Word Association	Team quiz	      
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Sound	Categorizing objects															
Childhood	Orientation															
Food	Using money															
Current Affairs	Number games															
Faces / Scenes	Word games															
Word Association	Team quiz															

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## Making a difference 2 – Maintenance CST sessions



24 additional MCST sessions

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## Common Goals and Objectives: All Sessions

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- Orientation to time, place, and person.
- Increase attention and concentration.
- Encourage expressive language/exercise word finding skills.
- Increase active engagement and confidence in expressing and exploring thoughts and opinions.
- Elevate mood.
- Promote social awareness.
- Promote new ideas and associations.
- Create new learning.

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## Session 6: Faces / Scenes

MCST 15

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### Level B:

- Prepare multiple (laminated) photographs of famous faces or of local scenes, to stimulate discussion. Give people one or more pictures and ask them to identify and allow discussion of people's memories.

### Level A:

- Give people one or more pictures of famous faces and ask for opinions, such as:
  - Who is the most attractive?
  - What do they have in common?
  - How are they different?



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## Session 9: Categorizing Objects

MCST 9

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### Level B:

- Get one person to pick from a selection of categories (e.g. men's names) and letters. Get group to think of many words in that category beginning with that letter.

### Level A:

- Place objects or pictures of objects on a table and ask the group to categorize them, for example items found in different rooms in the house.
- Place objects or pictures of objects on a table and ask the group to identify the 'odd one out'.



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## Session 9: Categorizing Objects Goals

This session promotes the following skills.

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### Basic

- Simple categorization

### Higher Level

- More complex categorical thinking
  - Compare / contrast

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## Individual CST (iCST)\*

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- Involves one-to-one CST, led by home carers, professionals or volunteers. Follows similar themes to group CST.
- A total of 356 caregiving dyads were recruited and 273 completed the trial.
- 75 structured CST sessions for people with dementia, completed up to three times a week for 25 weeks. Family carers were supported to deliver the sessions at home.
- At follow-up, no differences in any of the primary outcomes when comparing iCST to treatment as usual.
- iCST improved relationship between the person and their carer and carer QoL.
- Uptake was low: people on average only received 33 sessions.

Orrell, M., Yates, L., Leung, P., Kang, S., Hoare, Z., Whitaker, C., ... & Pearson, S. (2017). The impact of individual Cognitive Stimulation Therapy (iCST) on cognition, quality of life, caregiver health, and family relationships in dementia: A randomised controlled trial. *PLoS Medicine*, 14(3), e1002269.

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## Key Features of Individual CST (iCST)

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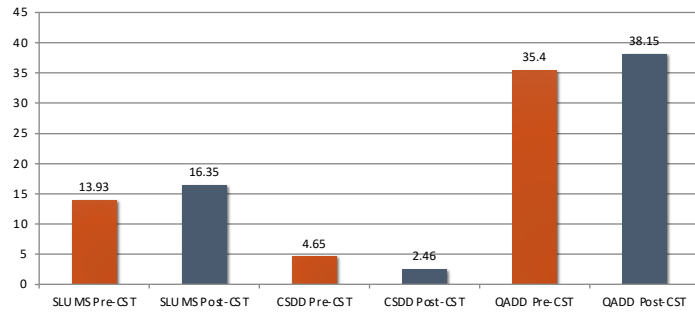
- The individual CST program is delivered by a relative, close friend, volunteer, or professional for:
  - 30 minutes a session
  - 3 times a week
  - over 25 weeks
  - Ideally same time each session
- Each individual CST session consists of a themed activity (i.e. life story, discussion of current affairs, being creative) and is designed to be mentally stimulating.
- Centered around fostering relationship.



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## OUR RESULTS

### Mean Pre & Post Scores by Test



#### Sample Characteristics (N=164)

Variables	CST Participants
Gender	71.3% Female
Age	78.55±10.01
Race	14.9% Non-White
Education	95.1% High School Graduate & Above
Living Arrangement	61% Community Dwelling
Pre-CST SLUMS	13.93

#### Paired Sample T-Test

	Mean	Std Dev	SE Mean	t value	Df	Sig (two-tailed)
SLUMS	2.061	3.716	.307	6.725	146	.000
Cornell Scale for Depression	-1.921	3.847	.318	-6.034	145	.000
Quality of Life – Alzheimer's Disease	2.545	4.658	.387	6.579	144	.000

Stewart, D. B., Berg-Weger, M., Tebb, S., Sakamoto, M., Roselle, K., Downing, L., ... & Hayden, D. (2017). Making a difference: A study of cognitive stimulation therapy for persons with dementia. *Journal of Gerontological Social Work, 60*(4), 300-312.

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## Examples of Participant Improvement in Clock Drawing Test

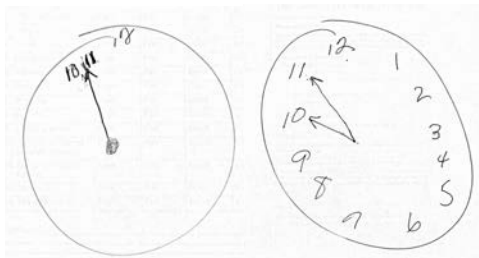


Fig. 1. Resident A Clock Drawing Test Pre- and Post-CST Results

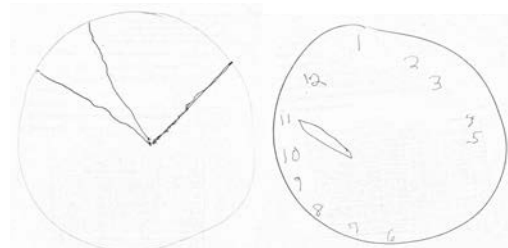


Fig. 2. Resident B Clock Drawing Test Pre- and Post-CST Results

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## Multi-Site Study (SLU, Perryville, A.T. Still) Comparing Community vs. Residential Outcomes of CST (2014-2020)

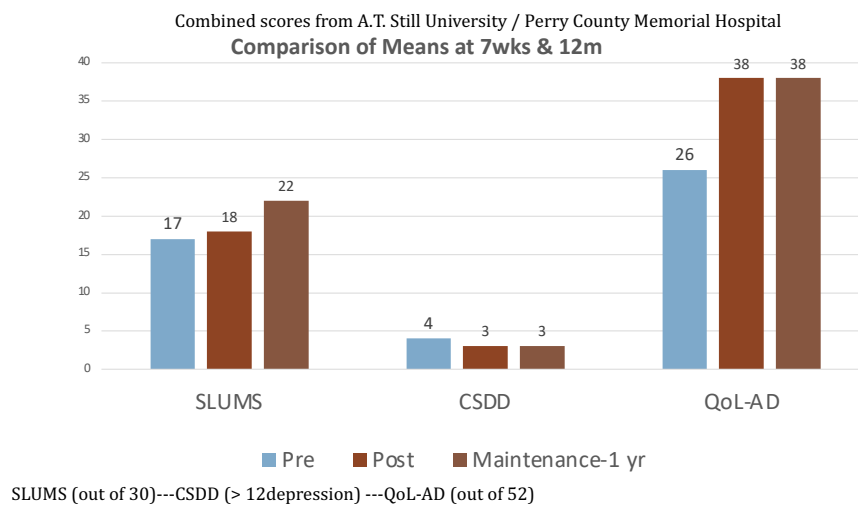
Measures	Community			Residential			Between group		
	N	M	SE	N	M	SE	Mean diff	t-value	p-value
<b>SLUMS</b>									
Baseline	173	17.74	0.47	85	15.20	0.75	2.54	2.97	0.003
Post	173	20.12	0.47	85	16.29	0.79	3.82	4.42	<0.001
Mean diff		<b>-2.37</b>			<b>-1.09</b>				
t-test		<b>-7.52</b>			<b>-2.43</b>				
p-value		<0.001			0.017				
<b>CSDD</b>									
Baseline	162	5.65	0.36	85	2.99	0.30	2.66	4.86	<0.001
Post	162	3.48	0.29	85	2.39	0.30	1.09	2.37	0.018
Mean diff		<b>2.17</b>			<b>0.60</b>				
t-test		6.37			1.91				
p-value		<0.001			0.060				
<b>QoL-AD</b>									
Baseline	131	34.78	0.51	62	36.31	0.82	-1.52	-1.63	0.104
Post	131	38.48	0.43	62	38.31	0.83	0.17	0.20	0.842
Mean diff		-3.70			-2.01				
t-test		-9.09			-3.22				
p-value		<0.001			0.002				

In the **community** group, participants' scores on the SLUMS measure improved significantly after 14 sessions of CST ( $t = -7.52$ ,  $p < 0.001$ ). Their cognitive function scores were 2.37 points higher after intervention.

In the **residential** group, participants had significantly improved scores on the SLUMS measure ( $t = -2.43$ ,  $p = 0.017$ ); their scores were 1.09 points higher post-intervention.

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## Maintenance Cognitive Stimulation Therapy (MCST) In Long Term Care



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## Benefits of Combining Exercise with CST

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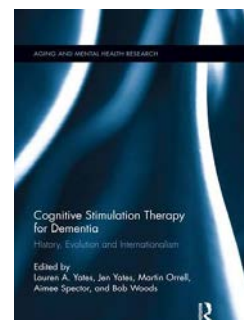
- Possibility that exercise could further improve cognition, and physical functioning leading to improvements in quality of life for older adults.
- Enjoyment and benefits of group interaction.
- Opportunity for physical exercise that might otherwise be difficult to get participation.
- Improved overall physical functioning reducing risk of falls and disability.
- Maintaining optimal level of independence.

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## For More Resources:

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- Cognitive Stimulation Therapy: University College London ([cstdementia.com](http://cstdementia.com))
- The Gateway Geriatric Education Center ([aging.slu.edu](http://aging.slu.edu))
- The SLU Aging and Memory Clinic (description of CST groups)
- Perry County Memorial Hospital Website (videos of CST)



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## Accomplishments of SLU and Perry County Memorial Hospital

### SLU

- Designated by founders as the North American CST Training Institute and that we're now offering Facilitator Certification and soon to offer Trainer Certification
- Hosted the third International Cognitive Stimulation Therapy Conference in 2018.
- Funded grants in the SLU Aging and Memory Clinic for CST groups



### Perry County Memorial Hospital

- Lead facilitators are highlighted in the published "Cognitive Stimulation Therapy for Dementia" Book
- Perry County is the leading healthcare setting in the U.S offering CST (over 20 past and present groups)
- Have trained/collaborated with the main CST partnership sites across Missouri



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